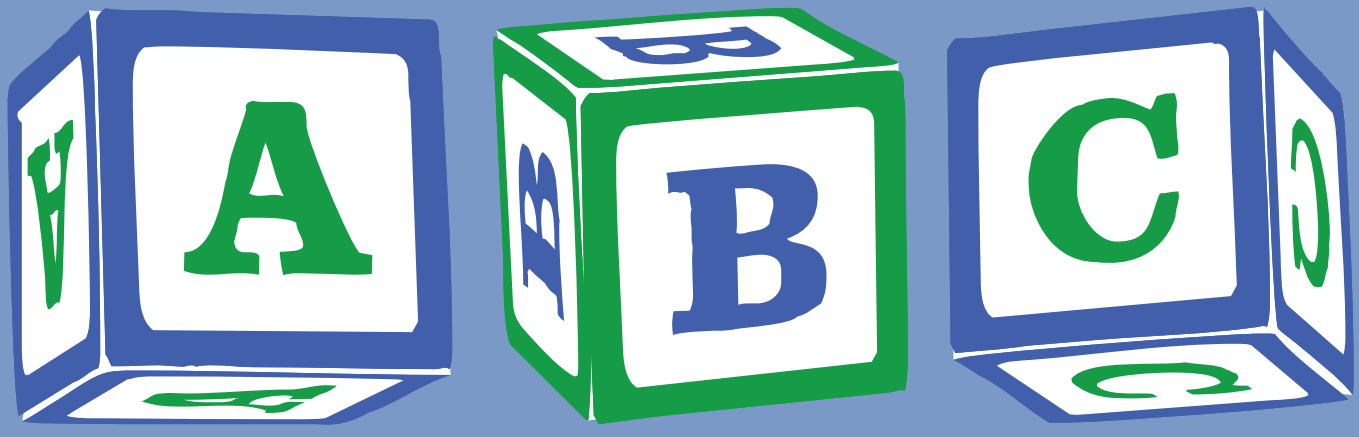
Embedded Instruction for Early Learning

Tools for Teachers

# Module 4: How to Evaluate



# Module 4: How to Evaluate
# Workbook and Practice Guide
# Research Version 3.0

Produced by the "Impact of Professional Development on Preschool Teachers' Use of Embedded Instruction Practices" Goal 3 study funded by the National Center for Special Education Research, Institute of Education Sciences (Project Number: R324A150076). The Principal Investigator and Co-Principal Investigators are Patricia Snyder, James Algina, and Mary McLean, University of Florida, and Mary Louise Hemmeter, Vanderbilt University. Brian Reichow, University of Florida, is an Investigator. The Project Coordinator is Crystal Bishop, University of Florida. Susan Sandall, Tara McLaughlin, and Larry Edelman contributed to a previous version of this workshop module, workbook, and practice guide

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# Module 4:
# How to Evaluate
# Workbook
# &
# Practice Guide

Welcome to the fourth in a series of four workshops focused on embedded instruction for early learning. The workshops are organized as learning modules. This workshop is the evaluating module. The four learning modules are part of a comprehensive professional development "toolkit" known as *Tools for Teachers*.

The Module 4 Workbook is designed for you to use during the workshop. Follow along with the slides and activities. Write your notes and ideas directly into this booklet. After the workshop, review the material for a refresher on what you have learned. The Module 4 Workbook starts on page 9 of this booklet.

The Module 4 Practice Guide is designed for you to use back home in your classroom. The guide provides additional information and references related to the content of this workshop. Use the practice guide to learn more about embedded instruction, refresh your memory, or use the materials to help your staff learn about embedded instruction. The Module 4 Practice Guide starts on page 91 of this booklet.

# Table of Contents

# Workbook

**Embedded Instruction for Early Learning**
***Tools for Teachers***

## Module 4: How to Evaluate

Version 3

Institute of Education Sciences
Project No. R32A150076

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**Notes:**

## Ground Rules

- Settle in and be comfortable
- Participate, ask, and reflect
- Parking lot
- Talk or text in the hallway
- Silence phones
- Get to know each other and enjoy…

2

**Notes:**


Tools for Teachers Workshops
Module 1: Overview
Module 2: What to Teach & When to Teach
Module 3: How to Teach
Module 4: How to Evaluate
3

**Notes:**


Key Practices: How to Evaluate
12. Implement strategies to help determine whether I am implementing instructional learning trials with fidelity (i.e., *Am I doing it?*).
13. Implement strategies to help determine if children are making progress on their learning targets (i.e., *Is it working?*).
14. Make data-based decisions about whether changes are needed to my instruction by considering (a) *Am I doing it?* and (b) *Is it working?*
4

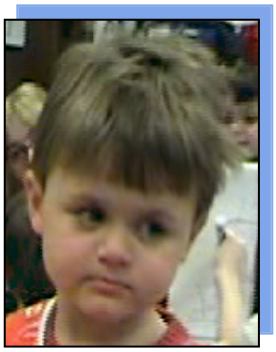
**Notes:**


Embedded Instruction
for Early Learning
Tools for Teachers
Did Embedded Instruction Work for Matthew?
5

**Notes:**

**Notes:**

# Did Matthew Move Forward?

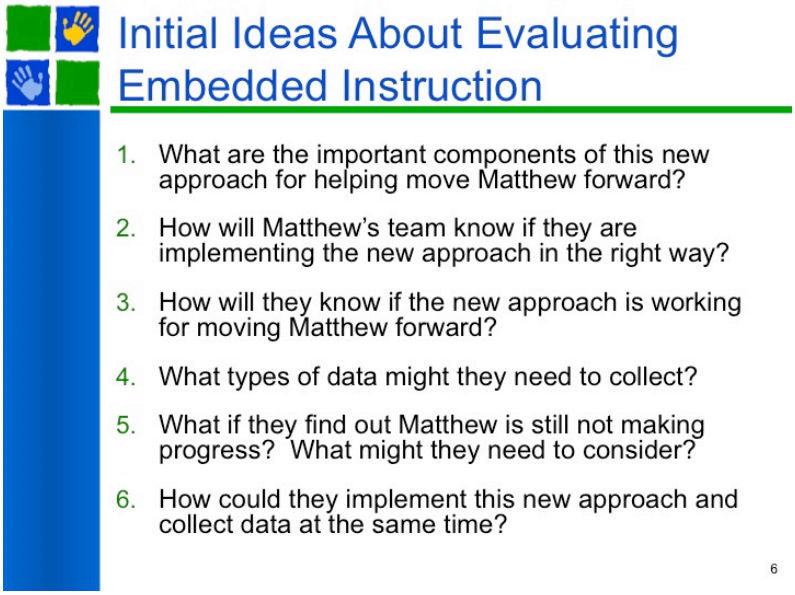


Remember Matthew? Matthew's team did not feel that he was making adequate progress toward his IEP objectives. The teacher was working on his objectives for 10-15 minutes per day in a pull out context and his therapists were also pulling him out to work on his objectives.

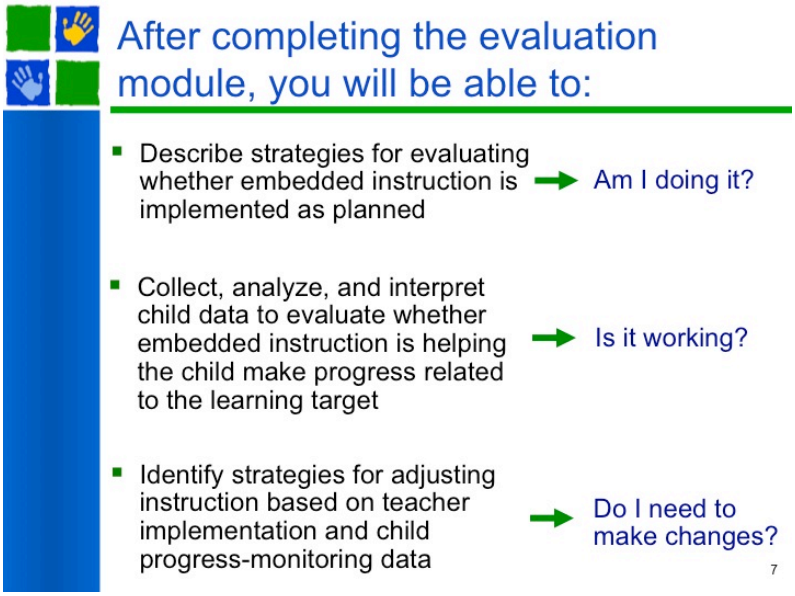
As a team, they decided to take a new approach to working on his objectives. The team focused on identifying what skills Matthew needed to be engaged and participative in everyday activities. They began by reviewing his daily schedule in the classroom and creating learning targets that supported his engagement in the ongoing activities and routines of the classroom. They made a matrix to plan when his learning targets could be taught throughout the day. They also discussed how the therapists could support his involvement in classroom activities and routines while also working on his learning targets.

The team was excited about this approach as they thought it would increase his engagement with his peers, it would increase his learning opportunities, and it might result in more generalized learning.

1. What are the important components of this new approach for helping move Matthew forward?
2. How will Matthew's team know if they are implementing the new approach in the right way?
3. How will they know if the new approach is working for moving Matthew forward?
4. What types of data might they need to collect?
5. What if they find out Matthew is still not making progress? What might they need to consider?
6. How could they possibly implement this new approach and collect data at the same time?


Initial Ideas About Evaluating Embedded Instruction
1. What are the important components of this new approach for helping move Matthew forward?
2. How will Matthew's team know if they are implementing the new approach in the right way?
3. How will they know if the new approach is working for moving Matthew forward?
4. What types of data might they need to collect?
5. What if they find out Matthew is still not making progress? What might they need to consider?
6. How could they implement this new approach and collect data at the same time?
6

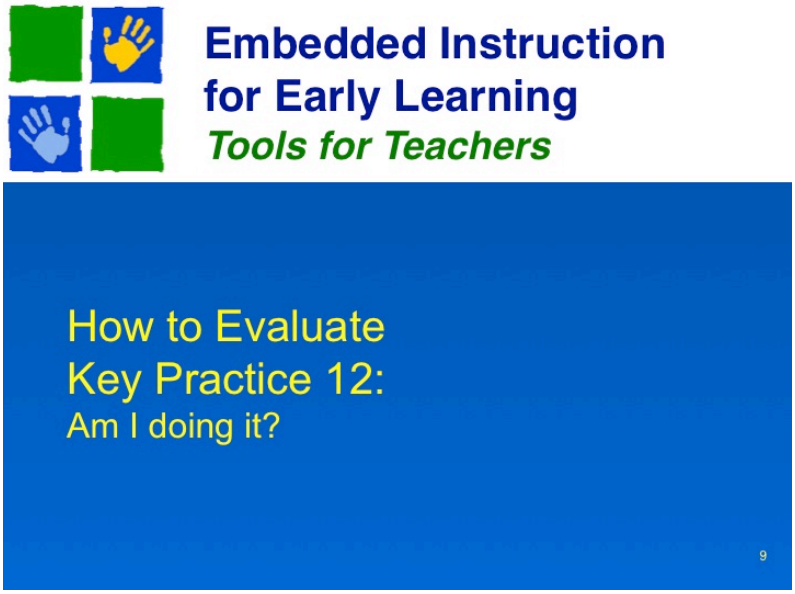
**Notes:**


After completing the evaluation module, you will be able to:
Describe strategies for evaluating whether embedded instruction is implemented as planned
Am I doing it?
Collect, analyze, and interpret child data to evaluate whether embedded instruction is helping the child make progress related to the learning target
Is it working?
Identify strategies for adjusting instruction based on teacher implementation and child progress-monitoring data
Do I need to make changes?
7

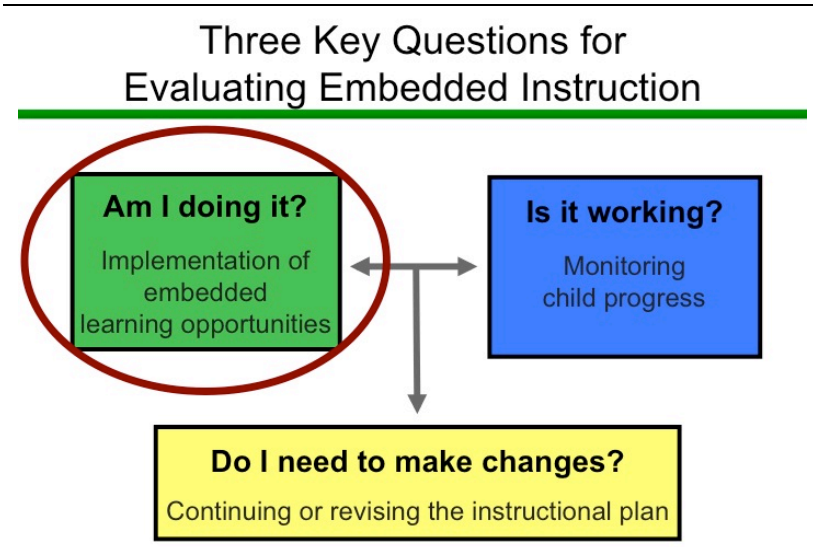
**Notes:**


Embedded Instruction
for Early Learning
Tools for Teachers
Three Key Questions for Evaluating Embedded Instruction
1. Am I doing it?
2. Is it working?
3. Do I need to make changes?
8

**Notes:**


Embedded Instruction
for Early Learning
Tools for Teachers
How to Evaluate
Key Practice 12:
Am I doing it?
9

**Notes:**


Three Key Questions for
Evaluating Embedded Instruction
Am I doing it?
Implementation of embedded learning opportunities
Is it working?
Monitoring child progress
Do I need to make changes?
Continuing or revising the instructional plan
10

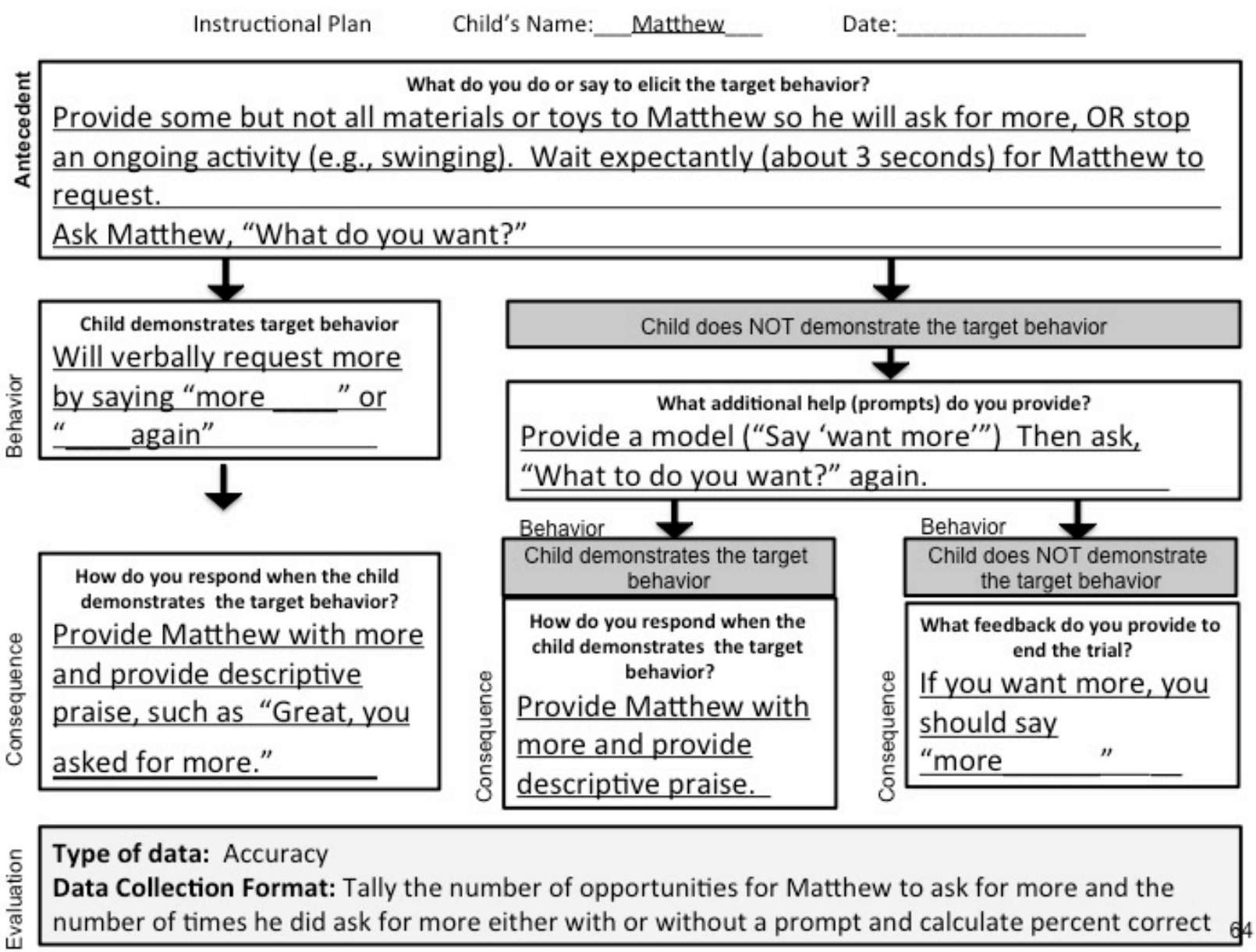
**Notes:**


Did learning trials occur in the activities in which we planned for them to occur?
11

**Notes:**

# *Activity Matrix for Matthew*

| | Follow 2-step directions | Move objects or himself in relation to another object or location | Holds marker or paintbrush and makes markings on paper | Use 2-word phrases to request "more" |
|---|---|---|---|---|
| Arrival | **2** | | | |
| Free Play | **4** | | | |
| Circle | | **3** | | |
| Outside | | **5** | | **3** |
| Snack | | | | **4** |
| Class Activity | | | **6** | |
| Departure | | **2** | | |
| Transitions | **2** | | | |


Instructional Plan
Child's Name: Matthew
Date:
Antecedent
What do you do or say to elicit the target behavior?
Provide some but not all materials or toys to Matthew so he will ask for more, OR stop an ongoing activity (e.g., swinging). Wait expectantly (about 3 seconds) for Matthew to request.
Ask Matthew, "What do you want?"
Behavior
Child demonstrates target behavior
Will verbally request more by saying "more ____" or "____again"
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Provide a model ("Say 'want more'") Then ask, "What to do you want?" again.
Behavior
Child demonstrates the target behavior
Behavior
Child does NOT demonstrate the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
Provide Matthew with more and provide descriptive praise, such as "Great, you asked for more."
Consequence
How do you respond when the child demonstrates the target behavior?
Provide Matthew with more and provide descriptive praise.
Consequence
What feedback do you provide to end the trial?
If you want more, you should say "more ____"
Evaluation
Type of data: Accuracy
Data Collection Format: Tally the number of opportunities for Matthew to ask for more and the number of times he did ask for more either with or without a prompt and calculate percent correct
64

# Implementation Data Form

Matthew's teachers collected data on:

1. The number of activities in which they embedded trials
2. The number of embedded trials they were able to implement
3. How many times the Matthew performed the learning target behavior
4. What changes, if any, they would make in their plan

They recorded their data in the table below:

<table>
<tr><td colspan="2">Learning Target:<br><br>Matthew will use 2-word phrases to request more (i.e., more of an activity, more food, more toys or objects) across a variety of activities without an adult model on 85% of opportunities each day for 4 consecutive days.</td></tr>
<tr><td colspan="2">How many activities did you embed trials in? __2___<br><br>List the activities: Outside and Snack</td></tr>
<tr><td>How many trials did you implement on this target?<br><br>6</td><td>How many times did the child perform the target behavior?<br><br>4</td></tr>
<tr><td colspan="2">What changes, if any, would you make to your plan? Why?<br><br>Provide additional trials during snack by implementing additional environmental arrangements. There were "missed" opportunities. In addition, Matthew only used 2-word phrases 4 times, despite providing all components of the trial. He appears to need more practice on this target.</td></tr>
</table>

## Planned Trials for Matthew

| | Follow 2-step directions | Move objects or himself in relation to another object or location | Holds marker or paintbrush and makes markings on paper | **Use 2-word phrases to request "more"** | How Many Trials? |
|---|---|---|---|---|---|
| Arrival | **2** | | | | **2** |
| Free Play | **4** | | | | **4** |
| Circle | | **3** | | | **3** |
| Outside | | **5** | | **3** | **8** |
| Snack | | | | **4** | **4** |
| Class Activity | | | **6** | | **6** |
| Departure | | **2** | | | **2** |
| Transitions | **2** | | | | **2** |
| How Many Trials? | **8** | **10** | **6** | **7** | |

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**Notes:**

## Planned Trials for Matthew

| | Mia | Matthew | Leo |
|---|---|---|---|
| **Arrival** | Verbally name colors - 3 | Follow a two-step direction relating to the immediate context - 2 | Move up and down stairs without assistance - 2 |
| **Free Play** | Name object in a picture or book- 2<br>Indicate big/little objects- 2 | Follow a two-step direction relating to the immediate context - 4 | Use a chair or table to stand up from the floor without adult support - 5<br>Will express his needs to adults and peers using 2-3 word sentences - 3 |
| **Circle** | Name object in a picture or book- 2 | Move objects or himself in relation to another object or location - 3 | Will express his needs to adults and peers using 2-3 word sentences - 2 |
| **Outside** | Ask peer or adult for a object- 3<br>Indicate big/little objects- 2 | Move objects or himself in relation to another object or location – 5<br>Use 2-word phrases to request more - 3 | Move up and down stairs without assistance - 2 |
| **Snack** | Ask peer or adult for a object- 2 | Use two word phrases to request more - 4 | Will express his needs to adults and peers using 2-3 word sentences - 3 |
| **Class Activity** | Verbally name colors - 4 | Make markings on paper - 6 | Use a chair or table to stand up from the floor without adult support - 2 |
| **Departure** | Indicate big/little objects- 2 | Move objects or himself in relation to another object or location - 2 | Move up and down stairs without assistance - 2 |
| **Transitions** | Verbally names colors - 2 | Follow a two-step direction relating to the immediate context - 2 | Use a chair or table to stand up from the floor without adult support - 4 |

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**Notes:**

## Implementation Data for Matthew

| |
|---|
| Learning Target:<br><br>Matthew will use 2-word phrases to request more (i.e., more of an activity, more food, more toys or objects) across a variety of activities without an adult model on 85% of opportunities each day for 4 consecutive days. |
| How many activities did you embed trials in? __2__<br>List the activities:<br>Outside and Snack |
| How many trials did you implement on this target?<br>6 \| How many times did the child perform the target behavior?<br>4 |
| What changes, if any, would you make to your plan? Why?<br><br>Provide additional trials during snack by implementing additional curricular modifications or environmental arrangements. There were "missed" opportunities. In addition, Matthew only used 2-word phrases 4 times, despite providing all components of the trial. He appears to need more practice on this target. |

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**Notes:**

Are the number of planned trials occurring in the activities?

15

**Notes:**

## Implementation Data for Matthew

| | |
|---|---|
| Learning Target:<br><br>Matthew will use 2-word phrases to request more (i.e., more of an activity, more food, more toys or objects) across a variety of activities without an adult model on 85% of opportunities each day for 4 consecutive days. | |
| How many activities did you embed trials in? __2__<br>List the activities:<br>Outside and Snack | |
| How many trials did you implement on this target?<br>6 | How many times did the child perform the target behavior?<br>4 |
| What changes, if any, would you make to your plan? Why?<br><br>Provide additional trials during snack by implementing additional curricular modifications or environmental arrangements. There were "missed" opportunities. In addition, Matthew only used 2-word phrases 4 times, despite providing all components of the trial. He appears to need more practice on this target. | |

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**Notes:**

How many embedded learning trials were **complete**?

17

**Notes:**

## Complete Learning Trials

- A-B-Cs specified for a learning trial have been implemented with accuracy
- Need to observe implementation of the A-B-Cs and determine if each component of a trial occurred
- Complete learning trials

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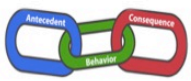
**Notes:**

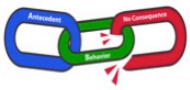
## Learning Trials

**Complete**





**Incomplete**





**Correct but not Complete**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**Notes:**

## Implementation Data for Matthew

| | |
|---|---|
| Learning Target:<br><br>Matthew will use 2-word phrases to request more (i.e., more of an activity, more food, more toys or objects) across a variety of activities without an adult model on 85% of opportunities each day for 4 consecutive days. | |
| How many activities did you embed trials in? __2__<br>List the activities:<br>Outside and Snack | |
| How many trials did you implement on this target?<br>6 | How many times did the child perform the target behavior?<br>4 |
| What changes, if any, would you make to your plan? Why?<br><br>Provide additional trials during snack by implementing additional curricular modifications or environmental arrangements. There were "missed" opportunities. In addition, Matthew only used 2-word phrases 4 times, despite providing all components of the trial. He appears to need more practice on this target. | |

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**Notes:**

## It's Time for the Movies!


- What is the target behavior?
- When did you plan to implement trials?
- How did you plan to implement trials?
- Were the trials implemented complete or incomplete?

21

**Notes:**

# *Am I Doing It?*

| | | | |
|---|---|---|---|
| **Target Behavior:** | | | |
| **Planned Activities:** | | | |
| **Planned Antecedent (natural cue/prompt):** | | | |
| **Planned Additional Help (prompt):** | | | |
| **Planned Consequence:** | | | |
| **Planned Feedback:** | | | |
| **Number of Trials:** | **Number Complete:** | **Number Correct:** | **Number Incomplete:** |

| **Antecedent** (Natural Cue/Prompt) | **Behavior** | **Additional Help (prompt)** | **Consequence** | **Feedback** |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

# *Am I Doing It?*

| | | | |
|---|---|---|---|
| **Target Behavior:** | | | |
| **Planned Activities:** | | | |
| **Planned Antecedent (natural cue/prompt):** | | | |
| **Planned Additional Help (prompt):** | | | |
| **Planned Consequence:** | | | |
| **Planned Feedback:** | | | |
| **Number of Trials:** | **Number Complete:** | **Number Correct:** | **Number Incomplete:** |

| **Antecedent** (Natural Cue/Prompt) | **Behavior** | **Additional Help (prompt)** | **Consequence** | **Feedback** |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

## Graphing Data

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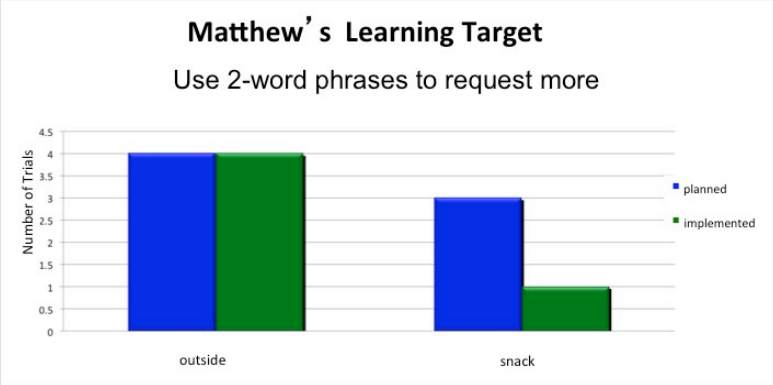
**Notes:**

## One Learning Target Across Activities and Routines

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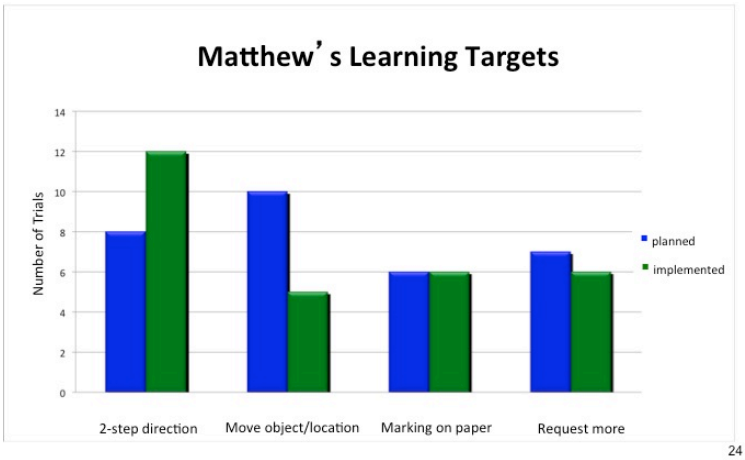
**Notes:**

## Compare Planned Versus Implemented Trials

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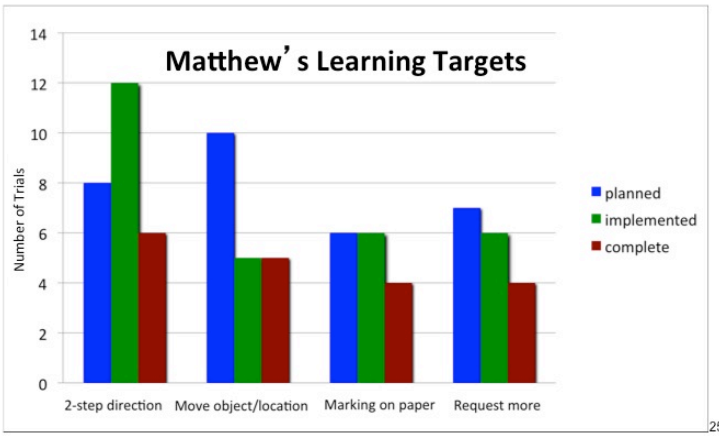
**Notes:**

## Compare Planned, Implemented, and Complete Trials

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**Notes:**

## Putting it All Together:
### Evaluating Implementation of Learning Trials

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**Notes:**

**Notes:**

# *Evaluating Implementation of Learning Trials*
## *Let's Practice*

In this video clip you will see Mia. Let's look at the teacher's planning forms and see what the teacher did across a couple of activities.

Remember to check:

→ Are learning trials occurring in the activities in which Mia's teacher planned for them to occur?

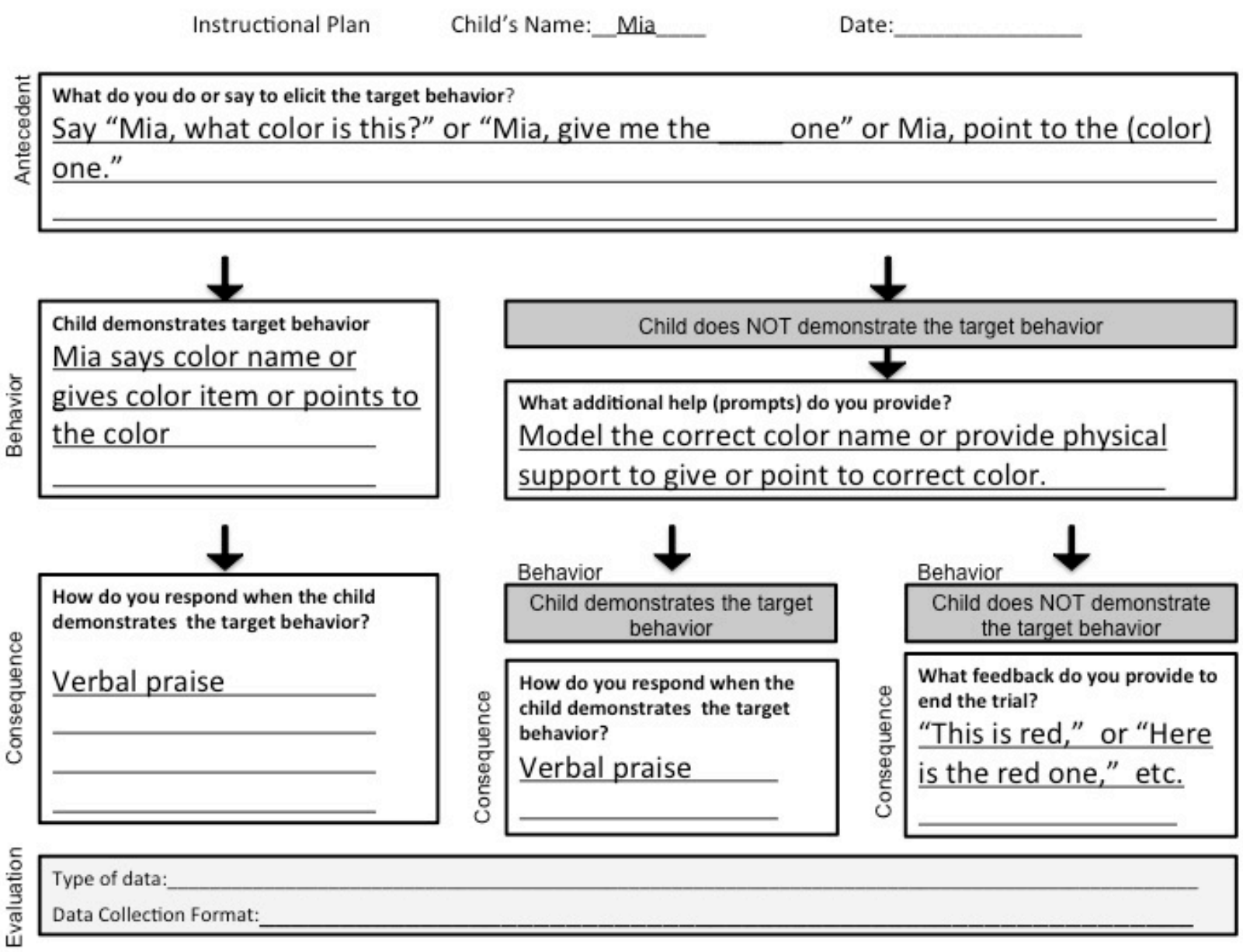
→ Are the numbers of planned trials occurring in these activities?

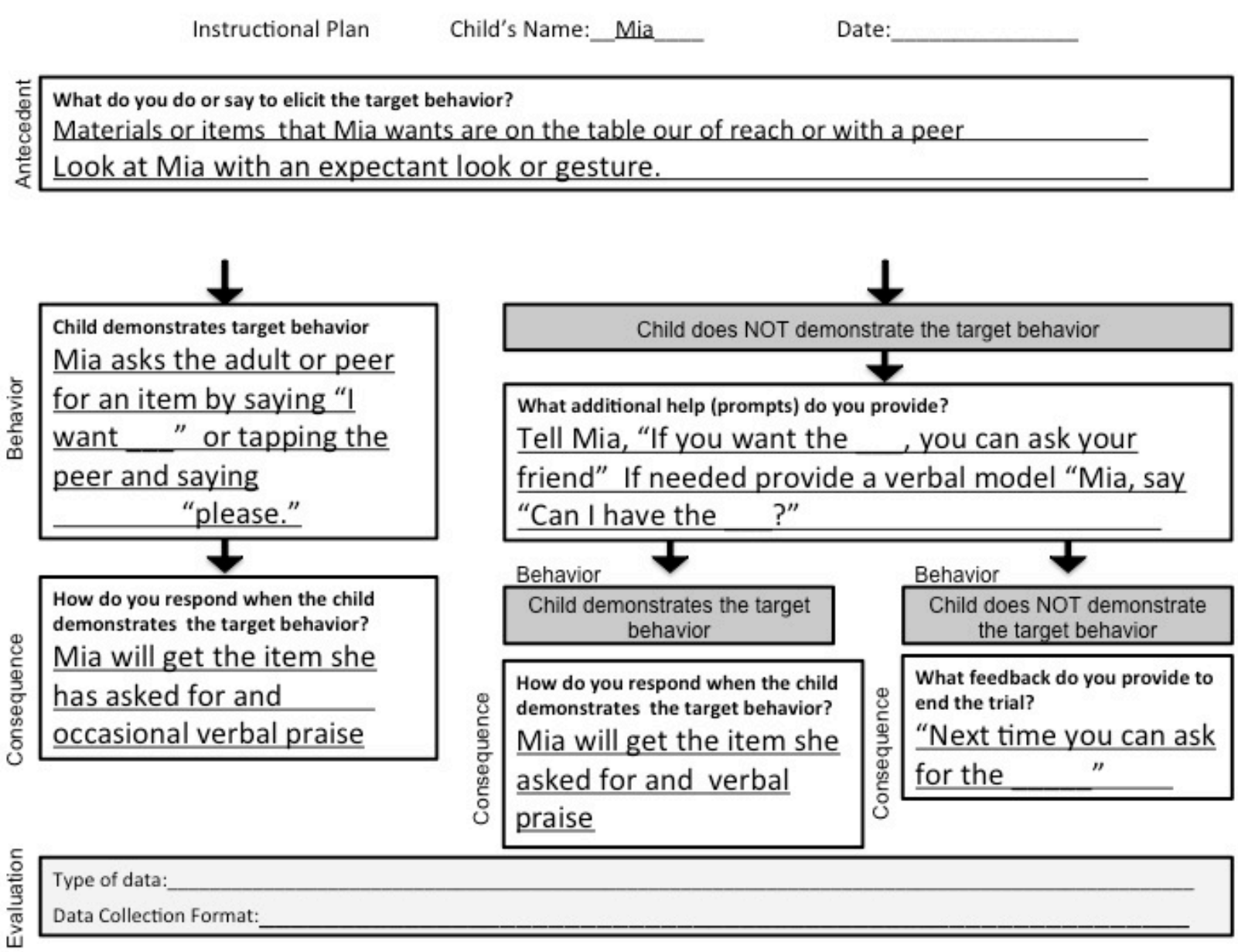
→ Are the components (the ABCs) implemented so that complete learning trials occur?

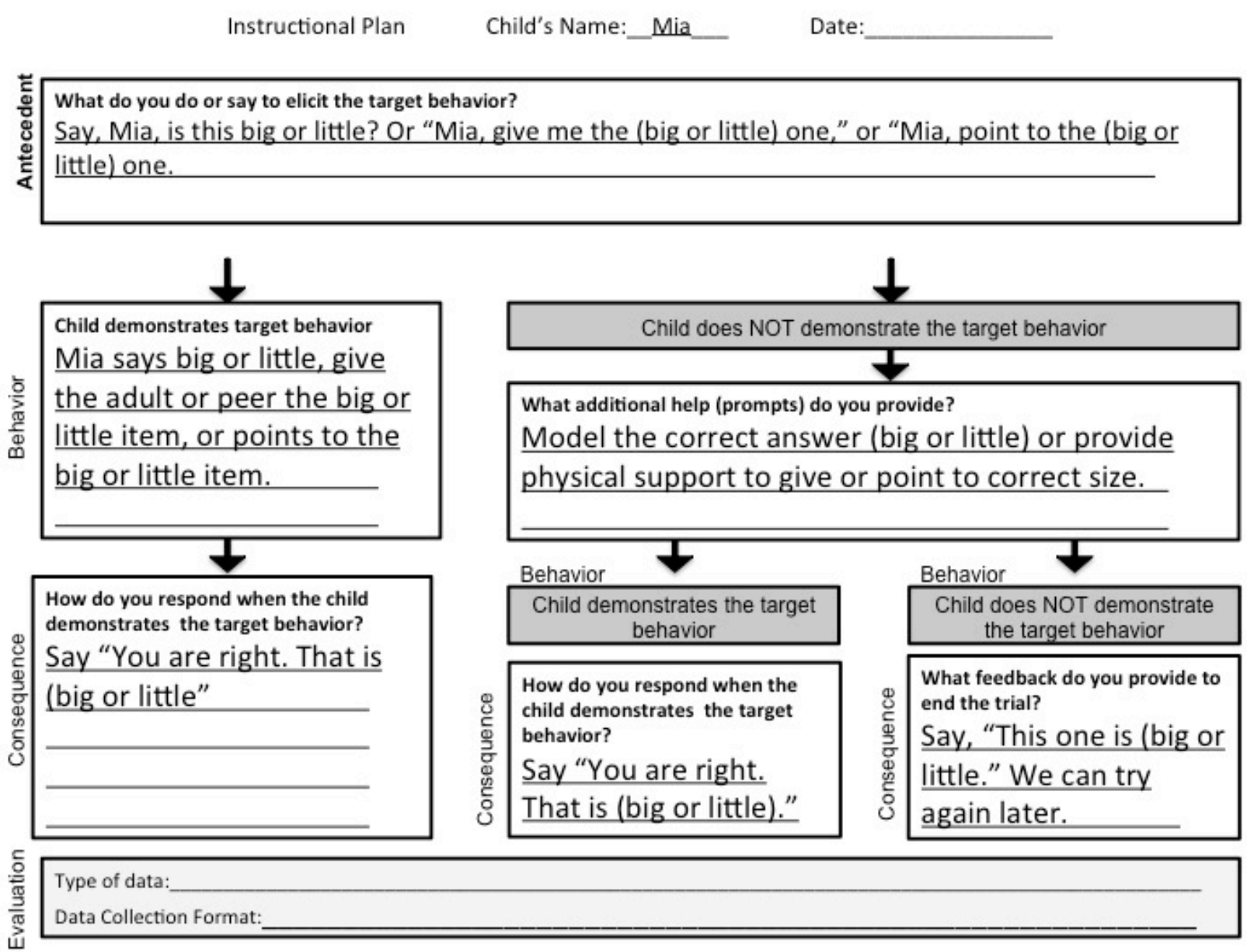
Mia is learning to:

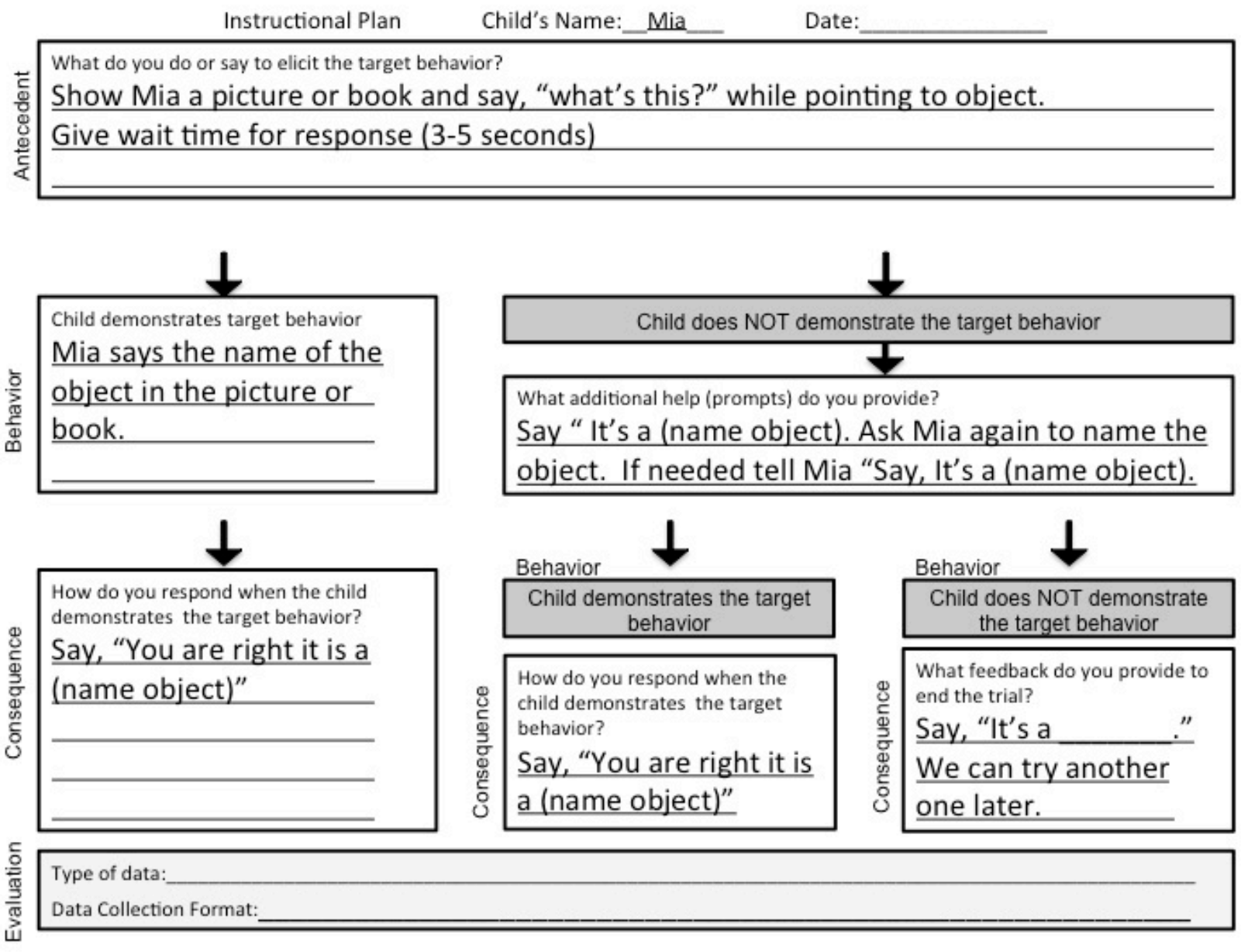
1. Identify colors by naming, giving, or pointing
2. Ask a peer or adult for an object or toy by using 1-2 words
3. Identify big and little by naming, giving, or pointing
4. Name objects in pictures or books

| | Colors | Ask for Object | Big/Little | Name objects in pictures | How many trials? |
|---|---|---|---|---|---|
| Morning Activity | 3 | | | | 3 |
| Breakfast | | 2 | | | 2 |
| Circle | | | 2 | 2 | 4 |
| Table Games | 2 | 1 | | | 3 |
| Snack | | 2 | | | 2 |
| Centers | 2 | | 3 | 3 | 8 |
| How many trials? | 7 | 5 | 5 | 5 | |


Instructional Plan
Child's Name: Mia
Date:
Antecedent
What do you do or say to elicit the target behavior?
Say "Mia, what color is this?" or "Mia, give me the ____ one" or Mia, point to the (color) one."
Behavior
Child demonstrates target behavior
Mia says color name or gives color item or points to the color
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Model the correct color name or provide physical support to give or point to correct color.
Consequence
How do you respond when the child demonstrates the target behavior?
Verbal praise
Behavior
Child demonstrates the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
Verbal praise
Behavior
Child does NOT demonstrate the target behavior
Consequence
What feedback do you provide to end the trial?
"This is red," or "Here is the red one," etc.
Evaluation
Type of data:
Data Collection Format:


Instructional Plan
Child's Name: Mia
Date:
Antecedent
What do you do or say to elicit the target behavior?
Materials or items that Mia wants are on the table our of reach or with a peer
Look at Mia with an expectant look or gesture.
Behavior
Child demonstrates target behavior
Mia asks the adult or peer for an item by saying "I want ___" or tapping the peer and saying "please."
Consequence
How do you respond when the child demonstrates the target behavior?
Mia will get the item she has asked for and occasional verbal praise
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Tell Mia, "If you want the ___, you can ask your friend" If needed provide a verbal model "Mia, say "Can I have the ___?"
Behavior
Child demonstrates the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
Mia will get the item she asked for and verbal praise
Behavior
Child does NOT demonstrate the target behavior
Consequence
What feedback do you provide to end the trial?
"Next time you can ask for the ____"
Evaluation
Type of data:
Data Collection Format:


Instructional Plan
Child's Name: Mia
Date:
Antecedent
What do you do or say to elicit the target behavior?
Say, Mia, is this big or little? Or "Mia, give me the (big or little) one," or "Mia, point to the (big or little) one.
Behavior
Child demonstrates target behavior
Mia says big or little, give the adult or peer the big or little item, or points to the big or little item.
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Model the correct answer (big or little) or provide physical support to give or point to correct size.
Consequence
How do you respond when the child demonstrates the target behavior?
Say "You are right. That is (big or little"
Behavior
Child demonstrates the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
Say "You are right. That is (big or little)."
Behavior
Child does NOT demonstrate the target behavior
Consequence
What feedback do you provide to end the trial?
Say, "This one is (big or little." We can try again later.
Evaluation
Type of data:
Data Collection Format:


Instructional Plan
Child's Name: Mia
Date:
Antecedent
What do you do or say to elicit the target behavior?
Show Mia a picture or book and say, "what's this?" while pointing to object.
Give wait time for response (3-5 seconds)
Behavior
Child demonstrates target behavior
Mia says the name of the object in the picture or book.
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Say " It's a (name object). Ask Mia again to name the object. If needed tell Mia "Say, It's a (name object).
Consequence
How do you respond when the child demonstrates the target behavior?
Say, "You are right it is a (name object)"
Behavior
Child demonstrates the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
Say, "You are right it is a (name object)"
Behavior
Child does NOT demonstrate the target behavior
Consequence
What feedback do you provide to end the trial?
Say, "It's a _____."
We can try another one later.
Evaluation
Type of data:
Data Collection Format:

## Review Planned Trials

| Mia | Colors | Ask for Object | Big/Little | Name objects in pictures | How many trials? |
|---|---|---|---|---|---|
| Morning Activity | 3 | | | | 3 |
| Breakfast | | 2 | | | 2 |
| Circle | | | 2 | 2 | 4 |
| Table Games | 2 | 1 | | | 3 |
| Snack | | 2 | | | 2 |
| Centers | 2 | | 3 | 3 | 8 |
| How many trials? | 7 | 5 | 5 | 5 | |

27

**Notes:**

## Counting Complete Learning Trials

28

**Notes:**

As we watch the video, use the matrix to count the number of learning opportunities for each target in each activity.

| | Colors | Ask for Object | Big/Little | Name objects in pictures | How many trials? |
|---|---|---|---|---|---|
| Morning Activity | | | | | |
| Breakfast | | | | | |
| Circle | | | | | |
| Table Games | | | | | |
| Snack | | | | | |
| Centers | | | | | |
| How many trials? | | | | | |

Let's watch the video again. For each learning trial, try to describe what happened for the A, B, and C.

| Morning Activity | | | | |
|---|---|---|---|---|
| **Antecedent** (Natural Cue and Prompt) | **Behavior** | **Additional Help** (Prompts) | **Consequence** | **Feedback** |
| | | | | |
| | | | | |
| | | | | |

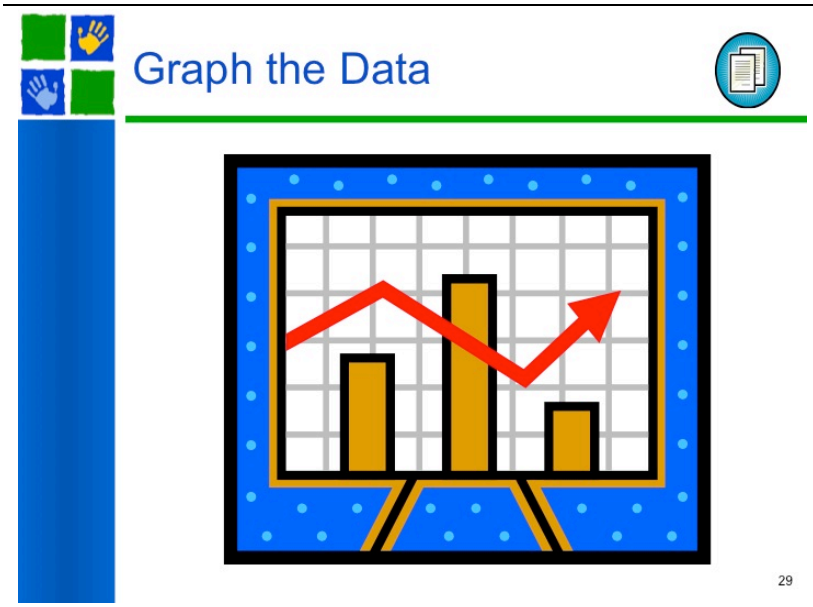
| Breakfast | | | | |
|---|---|---|---|---|
| **Antecedent** (Natural Cue and Prompt) | **Behavior** | **Additional Help** (Prompts) | **Consequence** | **Feedback** |
| | | | | |
| | | | | |
| | | | | |

| Circle | | | | |
|---|---|---|---|---|
| **Antecedent** (Natural Cue and Prompt) | **Behavior** | **Additional Help** (Prompts) | **Consequence** | **Feedback** |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Table Games | | | | |
|---|---|---|---|---|
| **Antecedent** (Natural Cue and Prompt) | **Behavior** | **Additional Help** (Prompts) | **Consequence** | **Feedback** |
| | | | | |
| | | | | |
| | | | | |

| Snack | | | | |
|---|---|---|---|---|
| **Antecedent** (Natural Cue and Prompt) | **Behavior** | **Additional Help** (Prompts) | **Consequence** | **Feedback** |
| | | | | |
| | | | | |
| | | | | |

| Centers | | | | |
|---|---|---|---|---|
| **Antecedent** (Natural Cue and Prompt) | **Behavior** | **Additional Help** (Prompts) | **Consequence** | **Feedback** |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |




**Notes:**

**Notes:**

Review your data and determine the following for each learning target:

1. **Identify colors by naming, giving, or pointing**
   → How many trials did the teacher plan to implement? _____
   → How many trials did the teacher actually implement? _____
   → How many trials were complete? ____

2. **Ask a peer or adult for an object or toy**
   → How many trials did the teacher plan to implement? _____
   → How many trials did the teacher actually implement? _____
   → How many trials were complete? ____

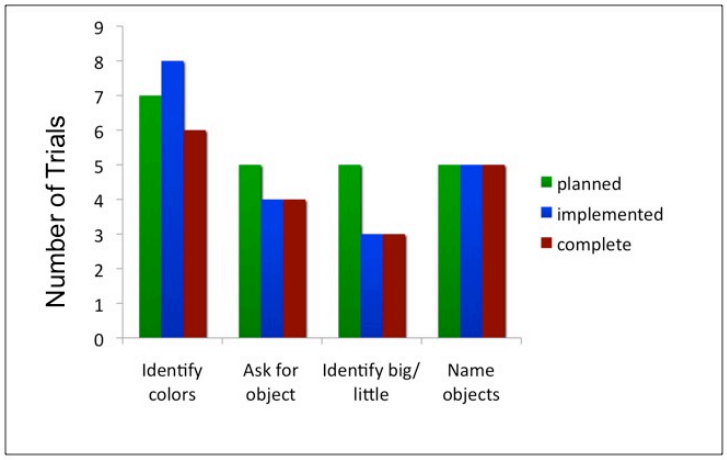
3. **Identify big and little by naming, giving, or pointing**
   → How many trials did the teacher plan to implement? _____
   → How many trials did the teacher actually implement? _____
   → How many trials were complete? ____

4. **Name objects in pictures or books**
   → How many trials did the teacher plan to implement? _____
   → How many trials did the teacher actually implement? _____
   → How many trials were complete? ____

# Graph Your Data

Use the space below to compare the number of planned trials, implemented trials, and complete learning trial.

## Compare Planned, Implemented, and Complete Trials




30

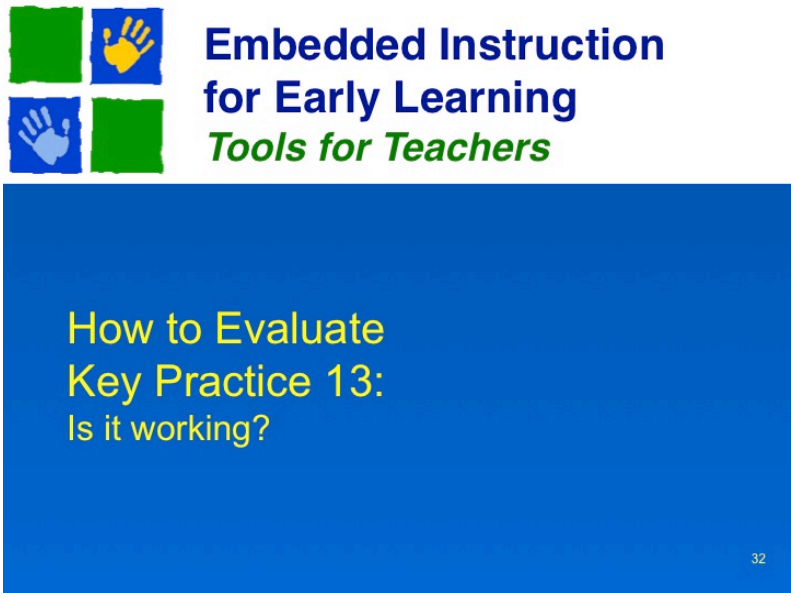
**Notes:**

## Am I Doing It?
## Evaluating Implementation Fidelity

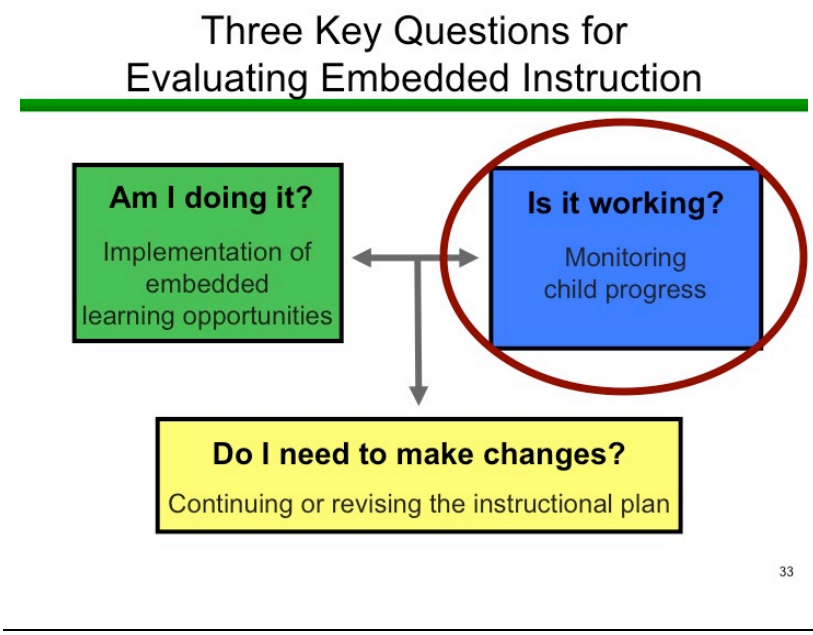
- Are learning trials occurring in the activities in which we planned for them to occur?
- Are the number of planned trials occurring in these activities?
- Are the components (the ABCs) implemented so that complete learning trials occur?

31

**Notes:**


Embedded Instruction
for Early Learning
Tools for Teachers
How to Evaluate
Key Practice 13:
Is it working?
32

**Notes:**


Three Key Questions for
Evaluating Embedded Instruction
Am I doing it?
Implementation of embedded learning opportunities
Is it working?
Monitoring child progress
Do I need to make changes?
Continuing or revising the instructional plan
33

**Notes:**

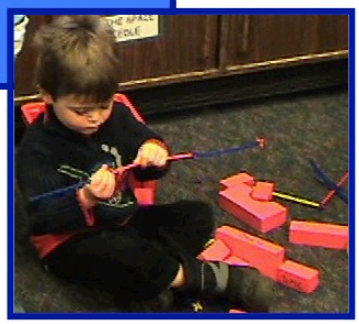
## Considerations for Monitoring Child Progress

- What behaviors are targeted? What type of data do I need?
- How do I collect data for different types of behaviors?
- How often? When? Where? And who should collect data?
- How should I display, summarize, and analyze the data?

34

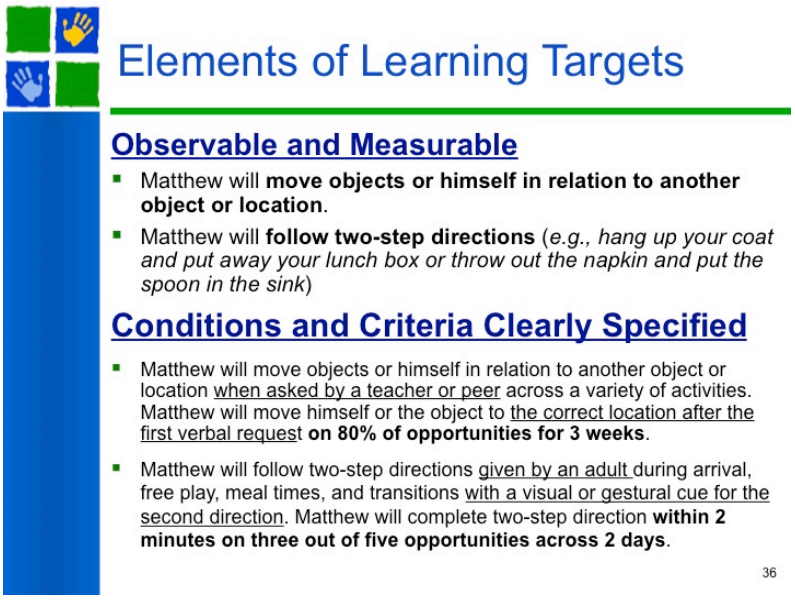
**Notes:**

What behaviors are targeted? What type of data do I need?

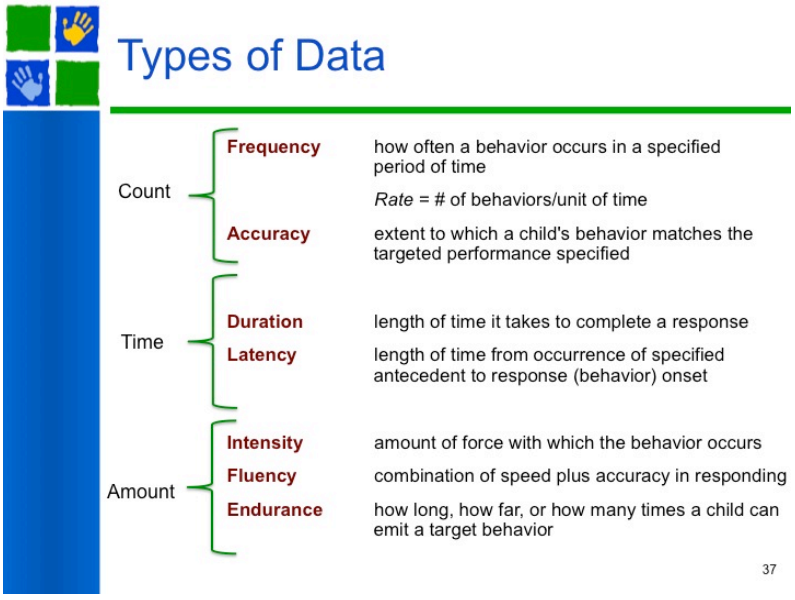


35

**Notes:**


Elements of Learning Targets
Observable and Measurable
Matthew will move objects or himself in relation to another object or location.
Matthew will follow two-step directions (e.g., hang up your coat and put away your lunch box or throw out the napkin and put the spoon in the sink)
Conditions and Criteria Clearly Specified
Matthew will move objects or himself in relation to another object or location when asked by a teacher or peer across a variety of activities. Matthew will move himself or the object to the correct location after the first verbal request on 80% of opportunities for 3 weeks.
Matthew will follow two-step directions given by an adult during arrival, free play, meal times, and transitions with a visual or gestural cue for the second direction. Matthew will complete two-step direction within 2 minutes on three out of five opportunities across 2 days.
36

**Notes:**


Types of Data
Count
Frequency
how often a behavior occurs in a specified period of time
Rate = # of behaviors/unit of time
Accuracy
extent to which a child's behavior matches the targeted performance specified
Time
Duration
length of time it takes to complete a response
Latency
length of time from occurrence of specified antecedent to response (behavior) onset
Amount
Intensity
amount of force with which the behavior occurs
Fluency
combination of speed plus accuracy in responding
Endurance
how long, how far, or how many times a child can emit a target behavior
37

**Notes:**

## Examples: Types of Data

**Frequency** Sarina will share or exchange at least three items or objects with peers across three activities for two consecutive days

**Latency** Leo will remove coat and join class activities within 3 minutes of entering the classroom for three consecutive days

**Accuracy** Maxford will jump by pushing off the ground with two feet simultaneously during all jumping activities with 80% correct jumps for two consecutive days

38

**Notes:**

How do I collect data for different types of behaviors?

39

**Notes:**


Ways to Collect Data
(You can use multiple methods)
Frequency..... Count it
Duration or Latency.... Time it
Accuracy..... Calculate % correct
Level of Support..... Take notes or rating scale
Fluency..... Accuracy plus speed
Permanent Record..... Collect work samples
Describe..... Take notes or use rubrics
40

**Notes:**


Frequency: Count it
Child: Sarina
Target: Sarina will share or exchange at least 3 items or objects with peers in each of the 3 activities for 2 consecutive days
Activity
Occurrences
Total
10/20/2009 Time: 9:00 - 9:15
Center time
////
4
10/20/2009 Time: 10:30 - 10:45
Outdoor play
//
2
41

**Notes:**

## Frequency Practice

**Child**: Sarina

**Target**: Sarina will share or exchange at least 3 items or objects with peers in each of the 3 activities for 2 consecutive days

| | Activity | Occurrences | Total |
|---|---|---|---|
| 10/20/2009 Time: 9:00-9:15 | Center time | //// | 4 |
| 10/20/2009 Time: 10:30-10:45 | Outdoor play | // | 2 |
| 10/20/2009 Time: 11:20-11:40 | Lunch | | |

42

**Notes:**

**Notes:**

# Collecting Frequency Data: Let's Count It

**Student**: Sarina

**Target**: Sarina will share or exchange objects with peers 3 times in each of the 3 activities for 2 days

| | Activity | Occurrences | Total |
|---|---|---|---|
| 10/20/2009<br>Time: 9:00-9:15 | Center time | //// | 4 |
| 10/20/2009<br>Time: 10:30-10:45 | Outdoor play | // | 2 |
| 10/20/2009<br>Time: 11:20-11:40 | Lunch | | |

## Latency: Time it

**Student**: Leo
**Target**: Will remove coat and join class activities within 3 minutes of entering the classroom for 3 consecutive days

| Day 1 | Day 2 | Day 3 | Day 4 |
|---|---|---|---|
| 8 | 8 | 8 | 8 |
| 7 | 7 | 7 | 7 |
| 6 | 6 | 6 | 6 |
| 5 | 5 | 5 | 5 |
| 4 | 4 | 4 | 4 |
| 3 | 3 | 3 | 3 |
| 2 | 2 | 2 | 2 |
| 1 | 1 | 1 | 1 |

numbers = minutes

43

**Notes:**

## Latency Practice

**Student**: Leo
**Target**: Will remove coat and join class activities within 3 minutes of entering the classroom for 3 consecutive days

| Day 5 | Day 6 | Day 7 | Day 8 |
|---|---|---|---|
| 8 | 8 | 8 | 8 |
| 7 | 7 | 7 | 7 |
| 6 | 6 | 6 | 6 |
| 5 | 5 | 5 | 5 |
| 4 | 4 | 4 | 4 |
| 3 | 3 | 3 | 3 |
| 2 | 2 | 2 | 2 |
| 1 | 1 | 1 | 1 |

numbers = minutes

44

**Notes:**

# Collecting Latency Data: Let's Time It

**Student:** Leo

**Target:** Leo will remove his coat and join class activities within 3 minutes of entering the classroom across for 3 consecutive days.

Watch the video and time how long it takes Leo to remove his coat and join activities after entering in the classroom. In this video we will see Leo enter the classroom in the morning on Day 7 and after outdoor play on Day 8. Use the data collection form that Leo's teacher has started.

| Day 5 | Day 6 | Day 7 | Day 8 |
|---|---|---|---|
| 8 | 8 | 8 | 8 |
| 7 | 7 | 7 | 7 |
| 6 | 6 | 6 | 6 |
| 5 | 5 | 5 | 5 |
| 4 | 4 | 4 | 4 |
| 3 | 3 | 3 | 3 |
| 2 | 2 | 2 | 2 |
| 1 | 1 | 1 | 1 |

## Accuracy Practice

**Student**: Maxford
**Target**: Maxford will jump by pushing off a supportive surface with two feet simultaneously during all jumping activities with 80% correct jumps for two consecutive days

| Maxford jumps throughout day: | | | | | | Percent Correct: | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | | | | | | | | | |

✓ = correct  × = not correct

45

**Notes:**

**Notes:**

# Collecting Accuracy Data: Calculating Percentage Correct

**Student:** Maxford
**Target:** Maxford will jump by pushing off of a supported surface with two feet simultaneously during all jumping activities with 80% correct jumps for two consecutive days.

Watch the video and count how many times Maxford tries to jumps. Indicate if the jump is correct (pushes off with two feet) or not correct.

**Maxford Jumps throughout the Day**

Date: _____

Total Jumps: _____
✓ Correct jumps:_____
✘ Not correct jumps:_____

Percent Correct:_____
(# correct/total #)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| | | | | | | | | | |
| **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
| | | | | | | | | | |

## Accuracy: Percentage Correct

**Student**: Maxford
**Target**: Maxford will jump by pushing off a supportive surface with two feet simultaneously during all jumping activities with 80% correct jumps for two consecutive days

| Maxford jumps throughout day: 10/22/09 Percent Correct: 60% | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| ✓ | ✓ | ✗ | ✗ | ✓ | ✓ | ✗ | ✗ | ✓ | ✓ |

✓ = correct ✗ = not correct

46

**Notes:**

## Level of Support: Take Notes or Use Rating Form

**Student**: Lilly
**Target**: Will use both hands to drink from a cup without spilling at snack, lunch, or at other times she has requested a drink

| Activity or Routine | Level of Support | | | |
|---|---|---|---|---|
| | I | V | PP | FP |
| Snack | | ✓✓ | ✓ | |
| After Outside | | | ✓✓ | ✓ |
| Lunch | ✓ | ✓✓ | | |

I = independent V = verbal prompt
PP = partial physical prompt FP = full physical prompt,

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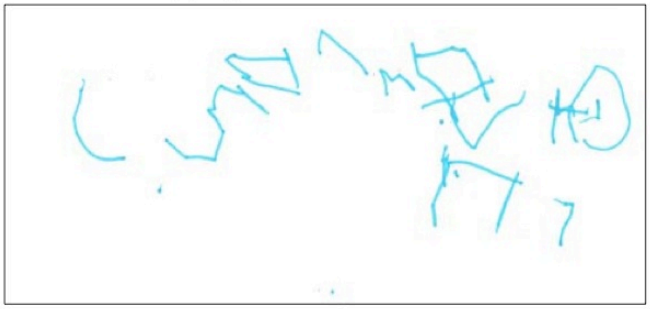
**Notes:**

## Permanent Product: Collect Work Sample

**Student**: Mia
**Date**: 10/23/09
Copying letters in her name



48

**Notes:**

## Describe: Take Notes or Use Rubric

| Copying Letters Rubric | | | |
|---|---|---|---|
| **Not Yet** | **Beginning** | **Developing** | **Well Developed** |
| • Does not choose to copy letters<br>• Does not copy letters so they are recognizable | • Tries to copy letters with prompting<br>• Letters are somewhat recognizable | • Willingly copies letters<br>• Letters copied are recognizable but may have reversals, incorrect sizing, spacing, or intermixing of upper and lower case | • Spontaneously copies letters with ease and enthusiasm<br>• Letters are uniform in height, regular in spacing, and seldom reversed<br>• Copying closely resembles original |

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**Notes:**

## Options for Collecting Data

- Live
- Recall
- Video
- Other people
- Difficult to do in a busy preschool classroom!
- Be creative!

50

**Notes:**

## "Live" Data Collection

- Activity matrix on clipboard
- Activity matrix posted around classroom near activity, routine, or transition areas
- Blank paper and pencil
- Paper clips in pockets
- Poker chips of different colors
- Rubber bands on wrist
- Golf counter

51

**Notes:**

## Recall Data Collection

- At end of activity, routine, or transition
- At end of day
- Accuracy of recall counts?

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**Notes:**

## Video Data Collection

- Using a video camera
- Deciding what and when to record
- Counting implementation of trials using a record sheet
- Video also useful for examining the quality of embedded learning trials by examining implementation of ABC components

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**Notes:**

## Other People Help with Data Collection

- Teaching assistant or other adults
- Provide them your activity matrix or implementation of learning trial record sheet to record

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**Notes:**

How often? When? Where? And who should collect data?

55

**Notes:**

## How Often Should I Collect Data?

- **Data collection schedules relate to the nature of the behavior and the performance criteria**
- **For schedules, consider:**
  - existing resources and staffing
  - embedded instruction occurs daily across activities even if data are collected less frequently
  - data collection is likely to occur using probes
- **Possible schedules include:**
  - bi-monthly probes
  - weekly probes
  - bi-weekly probes
  - daily probes

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**Notes:**

## When to Collect Data?

**When the skill is being taught:**

- In which activities does instruction occur?
- Is instruction spaced, massed, or distributed?

**When the skill is likely to be needed:**

- Are there times or activities when the skill is needed?

**When the skill is likely to occur:**

- How many opportunities will there be to collect data on the skill?

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**Notes:**

## Where to Collect Data?

**During activities specified on the activity matrix**

- Acquisition
- Maintenance

**Authentic opportunities to use the skill**

- Mastery

**During activities in which instruction has not occurred**

- Generalization
- Adaptation

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**Notes:**

## Who Will Collect Data?

**Data can be collected by:**

- Teachers
- Assistants
- Therapists

- Teacher creates data collection matrix
- Combines with activity matrix
- Specifies who collects data

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**Notes:**

## Data Collection Matrix

| Schedule | Mia | Matthew |
|---|---|---|
| **Arrival** | Verbally name colors<br>**Teacher-T,TH** | Follow a two-step direction<br>**Teacher-W,TH** |
| **Free Play** | Name object in a picture or book<br>Indicate big/little objects<br>**Assistant-Weekly** | Follow a two-step direction<br>**Teacher-W,TH** |
| **Circle** | Name object in a picture or book<br>**Assistant-Weekly** | Move objects or himself in relation to another object or location<br>**Team-Rotate Every 3rd Day** |
| **Snack** | Ask peer or adult for a object<br>**Team-Daily (1 week)** | Use two word phrases to request more<br>**Teacher -Weekly** |
| **Class Activity** | Verbally name colors<br>**Teacher-T,TH** | Hold adapted paint brush and make markings<br>**Assistant M,W,F** |
| **Departure** | Indicate big/little objects<br>**Assistant-Weekly** | Move objects or himself in relation to another object or location<br>**Team-Rotate Every 3rd Day** |

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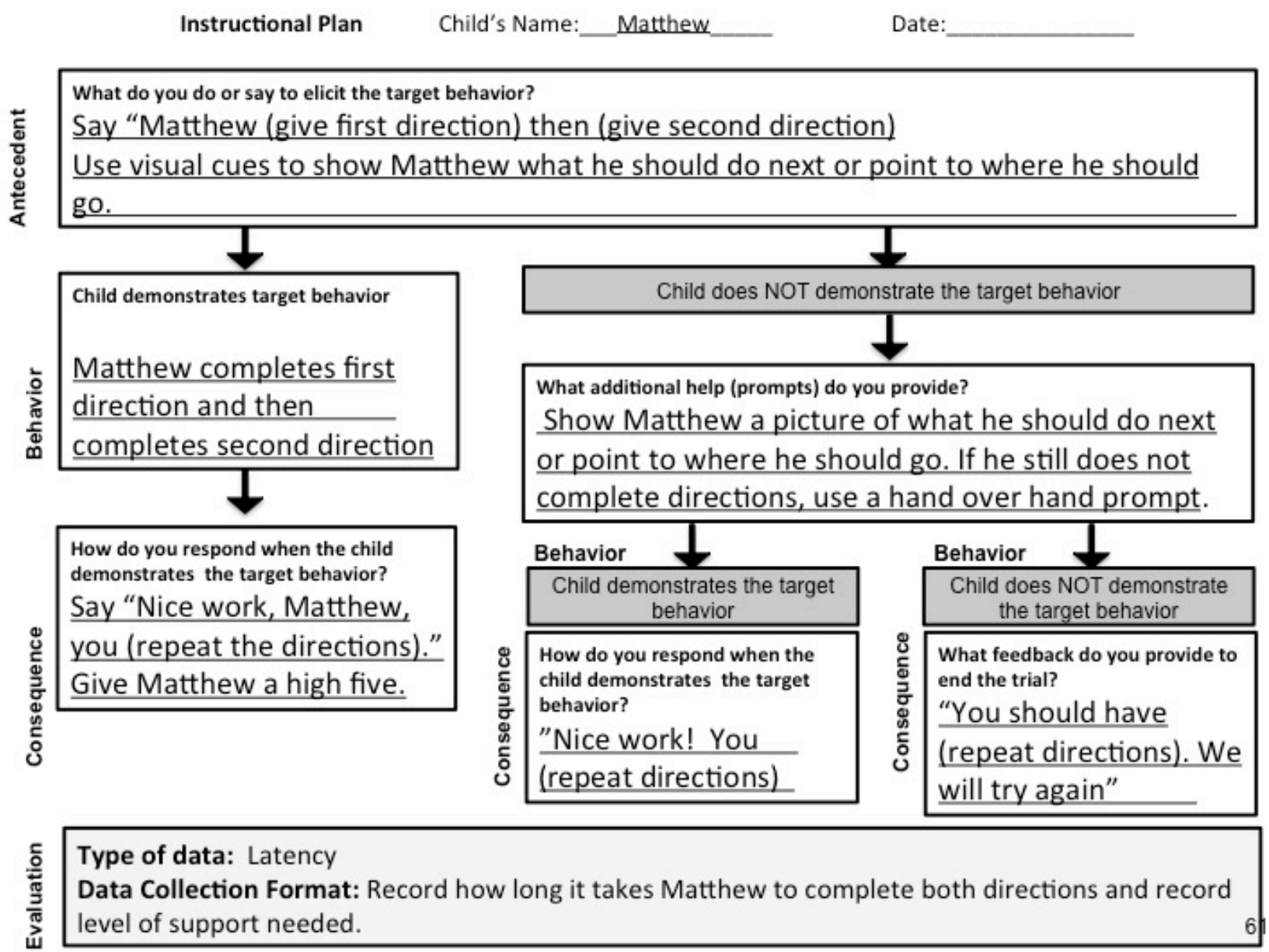
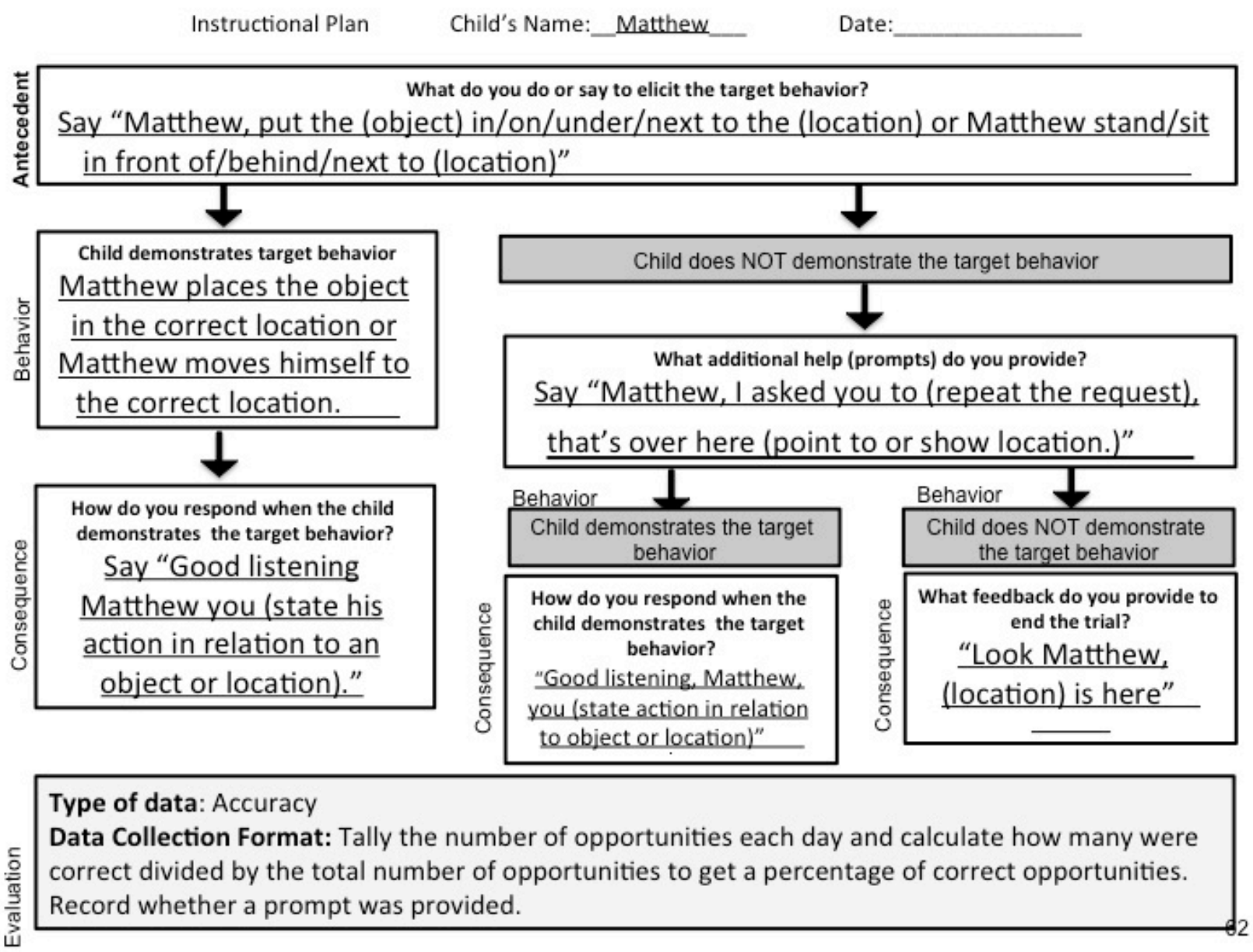
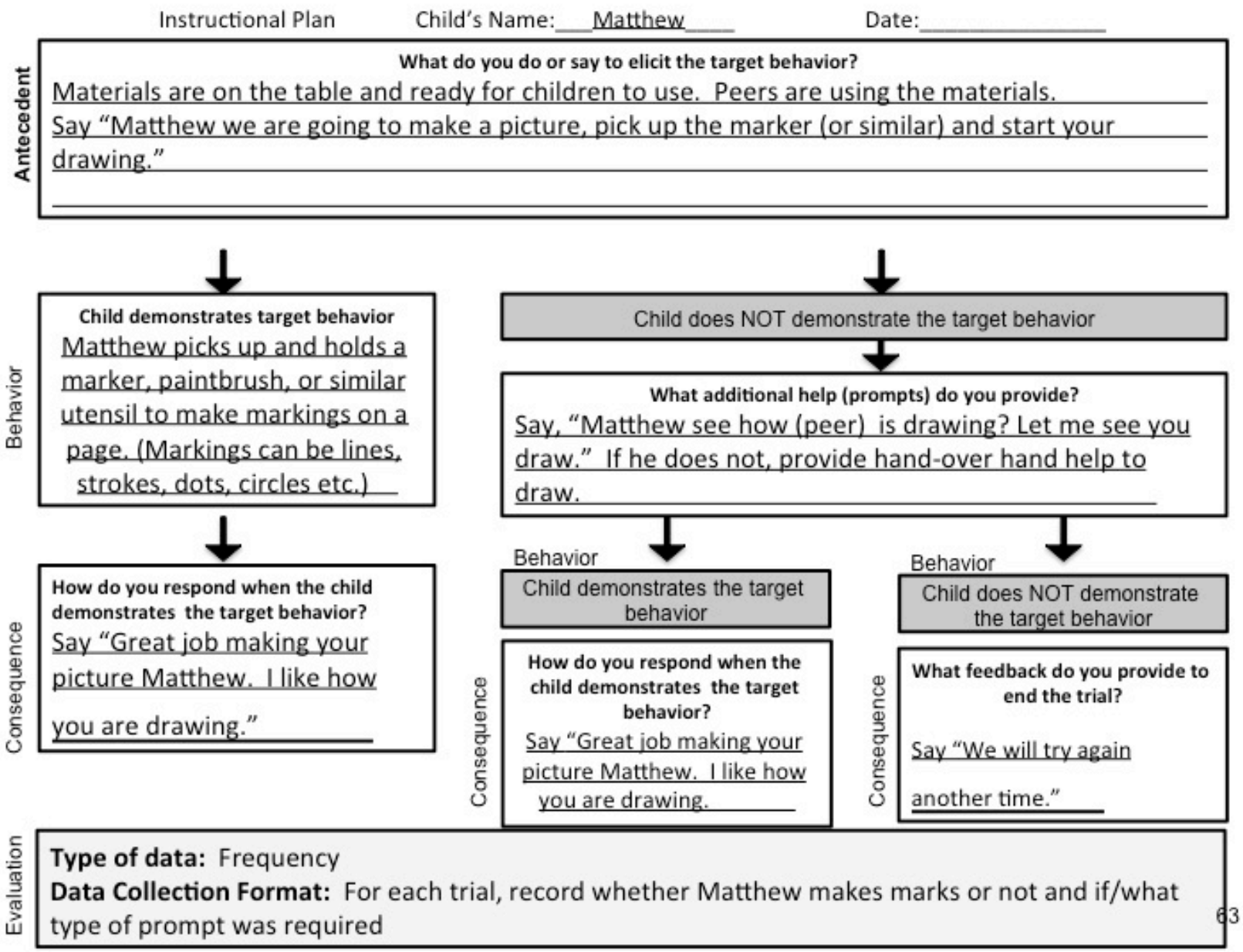
**Notes:**

**Notes:**


Instructional Plan
Child's Name: Matthew
Date:
Antecedent
What do you do or say to elicit the target behavior?
Say "Matthew (give first direction) then (give second direction)
Use visual cues to show Matthew what he should do next or point to where he should go.
Behavior
Child demonstrates target behavior
Matthew completes first direction and then completes second direction
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Show Matthew a picture of what he should do next or point to where he should go. If he still does not complete directions, use a hand over hand prompt.
Consequence
How do you respond when the child demonstrates the target behavior?
Say "Nice work, Matthew, you (repeat the directions)."
Give Matthew a high five.
Behavior
Child demonstrates the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
"Nice work! You (repeat directions)
Behavior
Child does NOT demonstrate the target behavior
Consequence
What feedback do you provide to end the trial?
"You should have (repeat directions). We will try again"
Evaluation
Type of data: Latency
Data Collection Format: Record how long it takes Matthew to complete both directions and record level of support needed.


Instructional Plan
Child's Name: Matthew
Date:
Antecedent
What do you do or say to elicit the target behavior?
Say "Matthew, put the (object) in/on/under/next to the (location) or Matthew stand/sit in front of/behind/next to (location)"
Behavior
Child demonstrates target behavior
Matthew places the object in the correct location or Matthew moves himself to the correct location.
Consequence
How do you respond when the child demonstrates the target behavior?
Say "Good listening Matthew you (state his action in relation to an object or location)."
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Say "Matthew, I asked you to (repeat the request), that's over here (point to or show location.)"
Behavior
Child demonstrates the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
"Good listening, Matthew, you (state action in relation to object or location)"
Behavior
Child does NOT demonstrate the target behavior
Consequence
What feedback do you provide to end the trial?
"Look Matthew, (location) is here"
Evaluation
Type of data: Accuracy
Data Collection Format: Tally the number of opportunities each day and calculate how many were correct divided by the total number of opportunities to get a percentage of correct opportunities. Record whether a prompt was provided.
62


Instructional Plan
Child's Name: Matthew
Date:
Antecedent
What do you do or say to elicit the target behavior?
Materials are on the table and ready for children to use. Peers are using the materials.
Say "Matthew we are going to make a picture, pick up the marker (or similar) and start your drawing."
Behavior
Child demonstrates target behavior
Matthew picks up and holds a marker, paintbrush, or similar utensil to make markings on a page. (Markings can be lines, strokes, dots, circles etc.)
Consequence
How do you respond when the child demonstrates the target behavior?
Say "Great job making your picture Matthew. I like how you are drawing."
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Say, "Matthew see how (peer) is drawing? Let me see you draw." If he does not, provide hand-over hand help to draw.
Behavior
Child demonstrates the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
Say "Great job making your picture Matthew. I like how you are drawing.
Behavior
Child does NOT demonstrate the target behavior
Consequence
What feedback do you provide to end the trial?
Say "We will try again another time."
Evaluation
Type of data: Frequency
Data Collection Format: For each trial, record whether Matthew makes marks or not and if/what type of prompt was required

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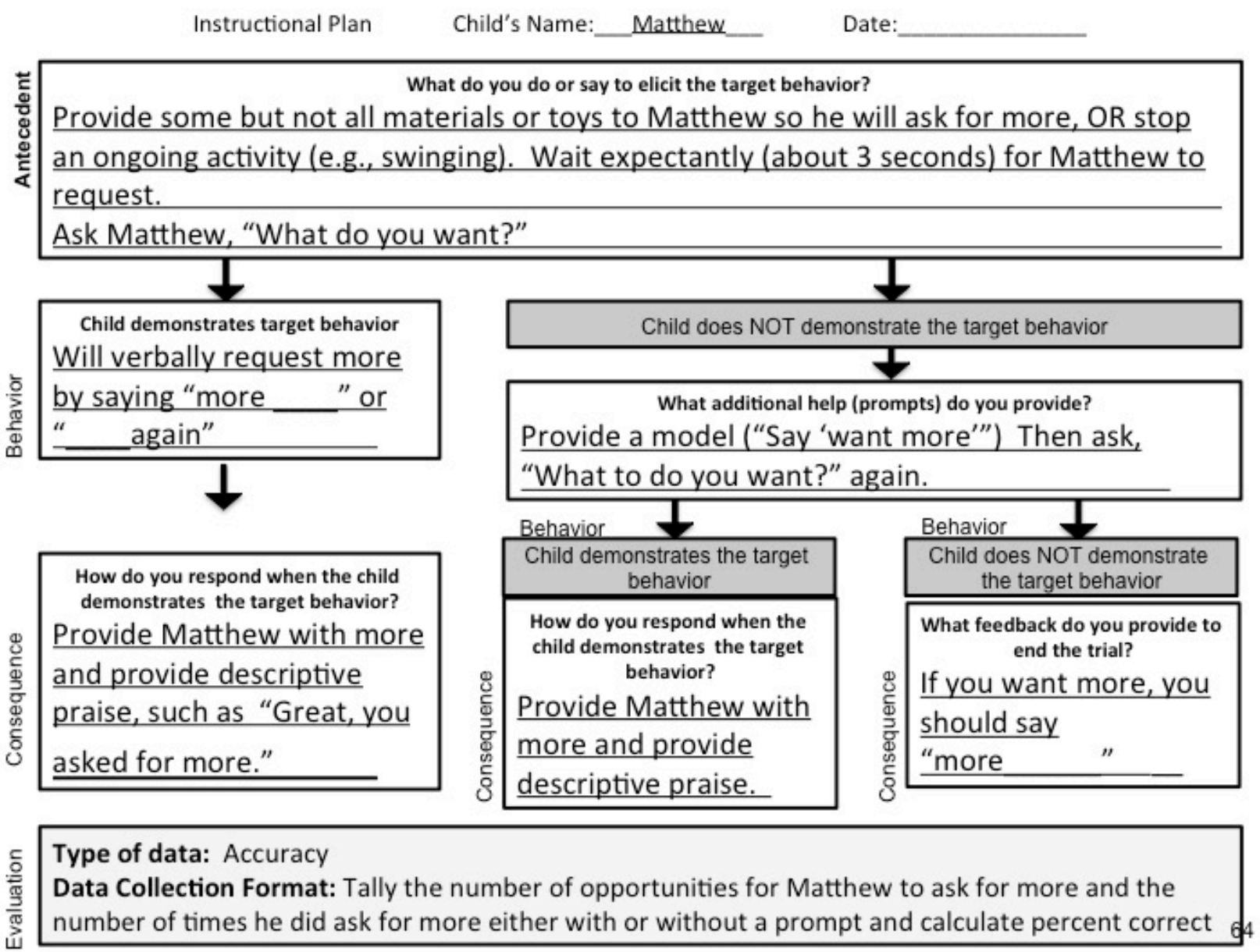
Instructional Plan
Child's Name: Matthew
Date:
Antecedent
What do you do or say to elicit the target behavior?
Provide some but not all materials or toys to Matthew so he will ask for more, OR stop an ongoing activity (e.g., swinging). Wait expectantly (about 3 seconds) for Matthew to request.
Ask Matthew, "What do you want?"
Behavior
Child demonstrates target behavior
Will verbally request more by saying "more ____" or "____again"
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Provide a model ("Say 'want more'") Then ask, "What to do you want?" again.
Behavior
Child demonstrates the target behavior
Behavior
Child does NOT demonstrate the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
Provide Matthew with more and provide descriptive praise, such as "Great, you asked for more."
Consequence
How do you respond when the child demonstrates the target behavior?
Provide Matthew with more and provide descriptive praise.
Consequence
What feedback do you provide to end the trial?
If you want more, you should say "more ____"
Evaluation
Type of data: Accuracy
Data Collection Format: Tally the number of opportunities for Matthew to ask for more and the number of times he did ask for more either with or without a prompt and calculate percent correct

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How should I display, summarize, and analyze the data?

65

**Notes:**

## Data Displays

**We can use:**

- An outline of written notes
- Tables with tally marks
- Pie Charts
- Graphs

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**Notes:**

## Analyzing: What Does the Data Tell Us?

- Which behaviors the child does independently
- What types of supports, adaptations, or assistance the child needs to perform a specific behavior
- How long the child performs the behavior
- How accurately the child performs the behavior
- The conditions under which the behavior occurs
- When interventions are successful
- Whether children are making progress
- What influences child performance

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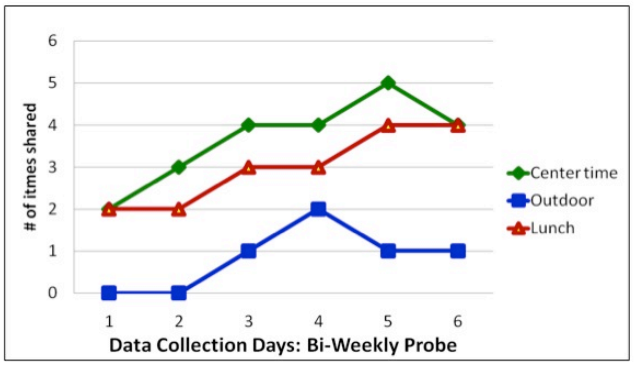
**Notes:**

## Data Display: Line Graph

**Student**: Sarina
**Target**: Sarina will share or exchange objects with peers three times across three activities for two days

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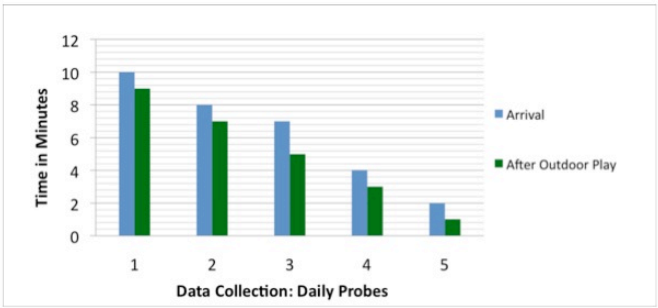
**Notes:**

## Data Display: Bar Graph

**Student**: Leo
**Target**: Will remove coat and join class activities within 3 minutes of entering the classroom for 3 consecutive days

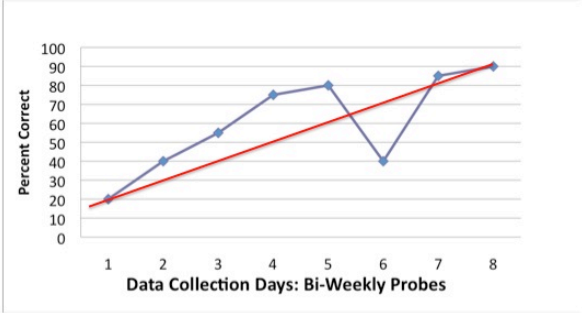



69

**Notes:**

## Data Display: Line Graph

**Student**: Maxford
**Target**: Maxford will jump by pushing off the ground with two feet simultaneously during all jumping activities with 80% correct jumps for two consecutive days




70

**Notes:**

## Interpretive Summary of Data

- Creating numerical summaries
- Creating narrative summaries
- A good summary provides key information on child progress in relation to the learning target

71

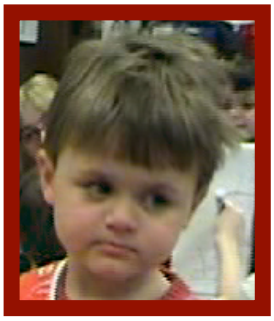
**Notes:**

## Matthew's Performance Data

72

**Notes:**

# Matthew's Performance Data



Review Matthew's performance data. Select one or two learning targets. On the following pages, work with partner to display the data, analyze the data, and interpret the data.

Matthew **will follow two-step directions** given by an adult during arrival, free play, mealtimes, and transitions with a visual or gestural cue for the second direction. Matthew will complete two-step direction within 2 minutes on three out of five opportunities across 2 days.

| Day 1 | | |
|---|---|---|
| **Activity** | **Time for Matthew to complete directions** | **Level of support (comments)** |
| Arrival | Not completed | (teacher talking to parent) |
| Breakfast | 3 min | Visual cue |
| Circle | 2 min | Visual cue |
| Centers | Not completed | (T.A with other child) |
| Transition | 2 min | Pointing cue |
| **Day 2** | | |
| Arrival | 2 min | Verbal redirection and visual cue |
| Breakfast | 1 min 35 sec | Visual cue |
| Clean-up | Not completed | (teacher busy) |
| Circle | 1 min 30 sec | Visual cue |
| Centers | Not completed | (teacher with other child) |
| Transition | 2 min | Pointing cue |
| Departure | Not completed | (teacher talking to parent) |

Matthew will move objects or himself in relation to another object or location when asked by a teacher or peer across a variety of activities. Matthew will move himself or the object to the correct location after the first verbal request on 80% of opportunities for 3 weeks.

| Y—Matthew did move to the correct location independently<br>N—Matthew did *not* move to correct location independently | | | | | | |
|---|---|---|---|---|---|---|
| Day 1 Week 1 | N | Y | N | N | Y | 2/5 | 40% |
| Day 2 Week 1 | Y | N | Y | N | Y | 3/5 | 60% |
| Day 3 Week 2 | Y | Y | Y | Y | Y | 4/5 | 80% |
| Day 4 Week 2 | Y | Y | Y | Y | Y | 5/5 | 100% |
| Day 5 Week 3 | Y | Y | Y | N | Y | 4/5 | 80% |

| Matthew will hold a marker or paintbrush and make markings on a piece of paper across a variety of class and art activities. Matthew will make at least six markings on the paper in each activity across 3 days. | | | |
|---|---|---|---|
| /--Tally for each marking | | | |
| Monday | / / / | 3 | Writing Center (crayons & pencils) |
| Wednesday | / / / / / / / / / | 9 | Art (buddy painting) |
| Friday | / / / / | 4 | Morning Activity (crayons) |
| Friday | / / / / / / / / | 8 | Theme Activity (watercolor) |

| Matthew will use 2-word phrases to request more (i.e., more of an activity, more food, more toys or objects) across a variety of activities without an adult model on 85% of opportunities each day for 4 consecutive days. | | | | | | | |
|---|---|---|---|---|---|---|---|
| M-adult model<br>G- gestural cue OR I-independent | | | | | | | |
| Day 1 | M | G | M | G | G | 3/5 | 60% |
| Day 2 | G | G | G | M | G | M | 4/6 | 66% |
| Day 3 | G | I | I | G | M | 4/5 | 80% |
| Day 4 | G | M | I | I | G | I | 5/6 | 83% |

## Display the data.

## Analyze the data.

**Use the questions below to review the data.**

→ Which behaviors does Matthew do independently?

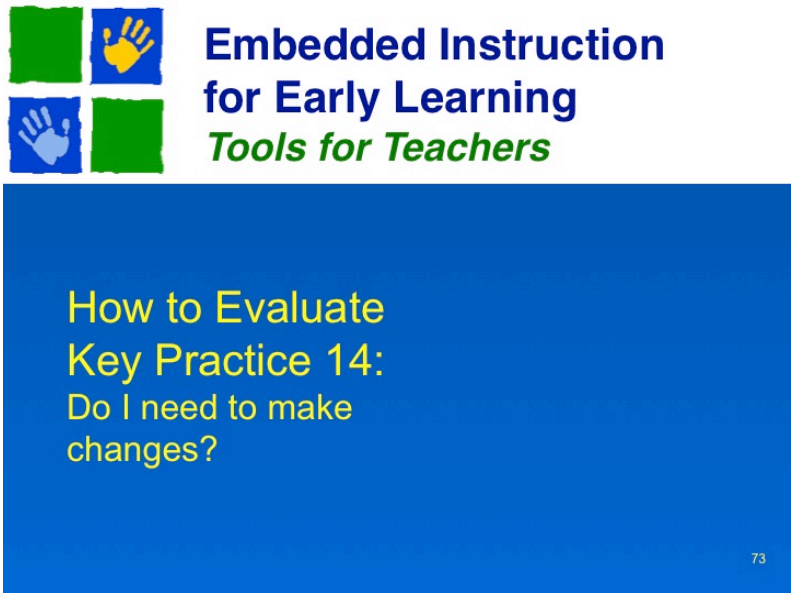
→ What types of supports, adaptations, or assistance does Matthew need to perform a specific behavior?

→ Is Matthew making progress?

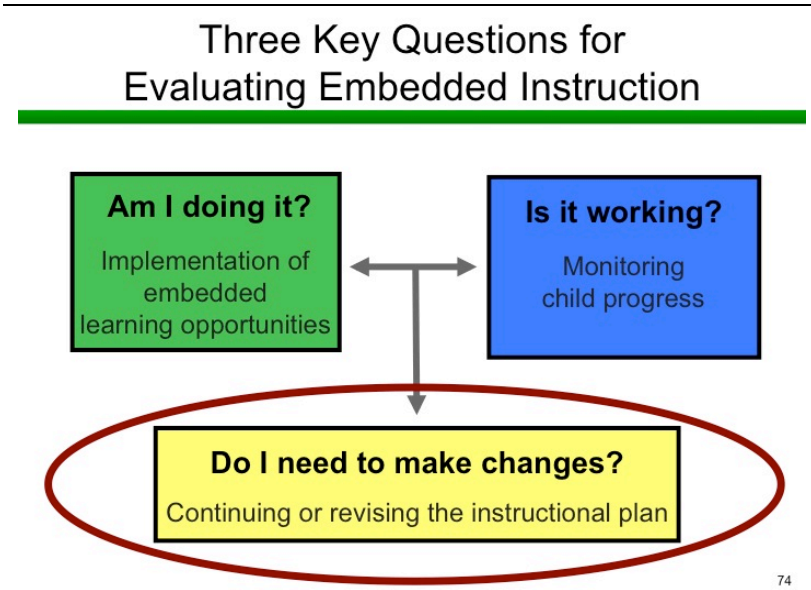
→ What influences Matthew's performance?

## Interpret the data.

**Provide a brief summary of Matthew's performance.**


Embedded Instruction
for Early Learning
Tools for Teachers
How to Evaluate
Key Practice 14:
Do I need to make
changes?
73

**Notes:**


Three Key Questions for
Evaluating Embedded Instruction
Am I doing it?
Implementation of
embedded
learning opportunities
Is it working?
Monitoring
child progress
Do I need to make changes?
Continuing or revising the instructional plan
74

**Notes:**

## Data-Based Decision Making

**Data to consider:**

- Implementation data, including trials and ABC components
- Child progress data

**Possible Data-Based Decisions:**

- Change where and how many learning opportunities occur
- Consider changing antecedents, additional help, or consequences
- Consider changing the behavior targeted

75

**Notes:**

## Implementation Data for Matthew

| | |
|---|---|
| Learning Target:<br>Matthew will use 2-word phrases to request more (i.e., more of an activity, more food, more toys or objects) across a variety of activities without an adult model on 85% of opportunities each day for 4 consecutive days. | |
| How many activities did you embed trials in? __2__<br>List the activities: Outside and Snack | |
| How many trials did you implement on this target?<br>6 | How many times did the child perform the target behavior?<br>4 |
| What changes, if any, would you make to your plan? Why?<br>Provide additional trials during snack using environmental arrangements. There were "missed" opportunities. In addition, Matthew only used 2-word phrases 4 times, despite providing all components of the trial. He appears to need more practice on this target. | |

76

**Notes:**

## Make a Decision for Matthew

77

**Notes:**

**Notes:**

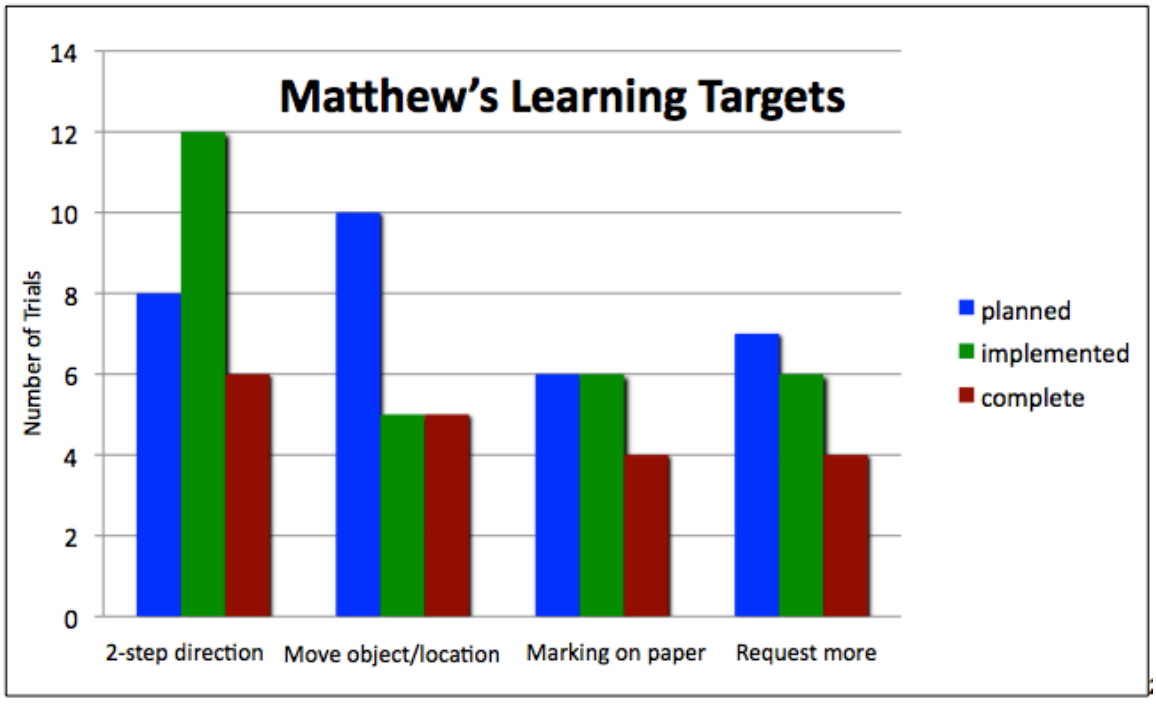
# Make a Decision for Matthew

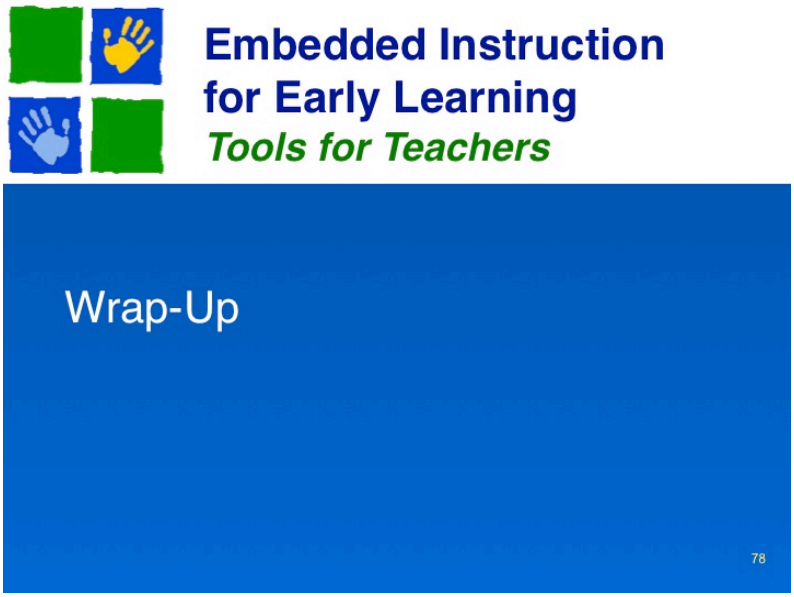
Select one of Matthew's learning targets and make a data-based decision about what changes, if any, need to be made. Remember to use the implementation data (provided below) and the child progress data (which you worked on a few minutes ago) to make your decision.

Learning Target: _____

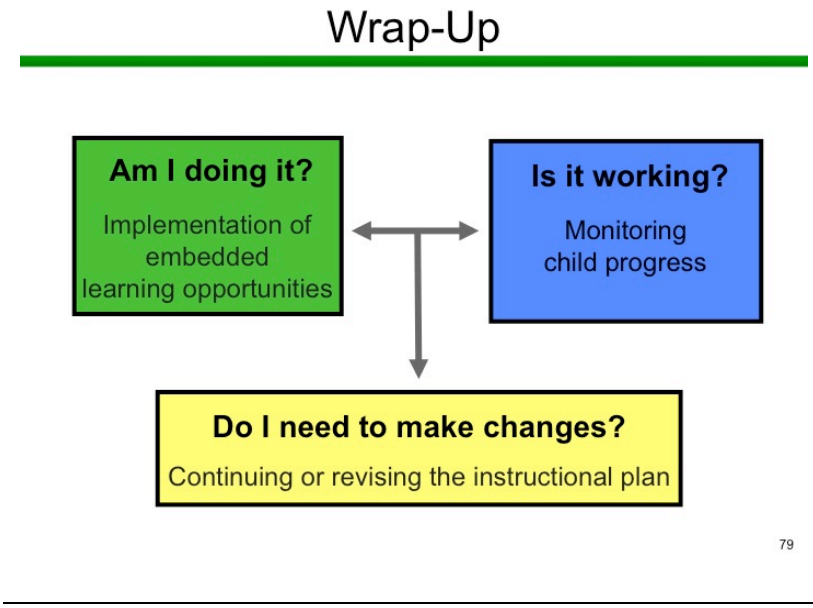
What changes, if any, would you make for Matthew?

Implementation Data

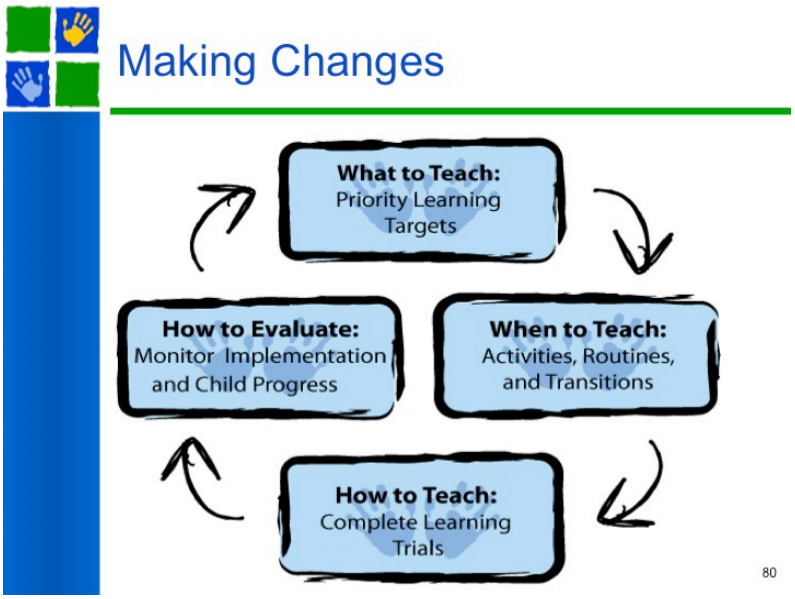



Embedded Instruction
for Early Learning
Tools for Teachers
Wrap-Up
78

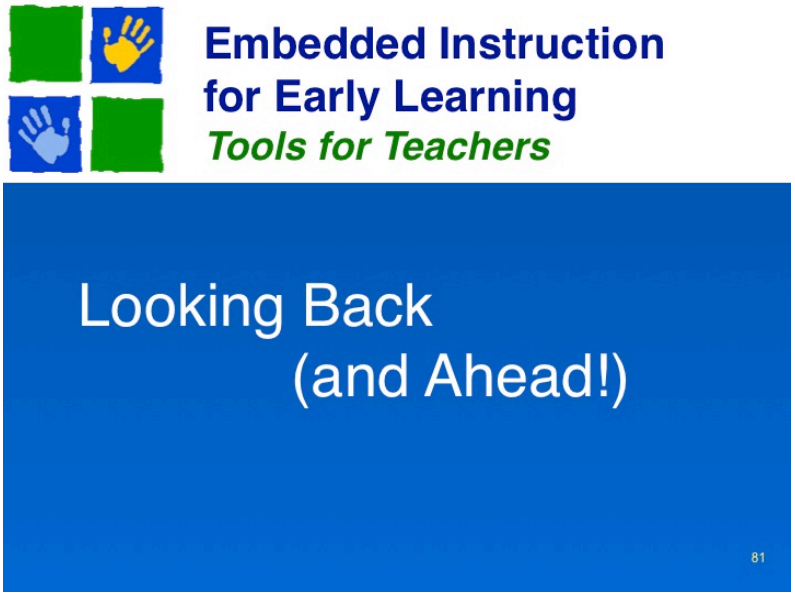
**Notes:**


Wrap-Up
Am I doing it?
Implementation of embedded learning opportunities
Is it working?
Monitoring child progress
Do I need to make changes?
Continuing or revising the instructional plan
79

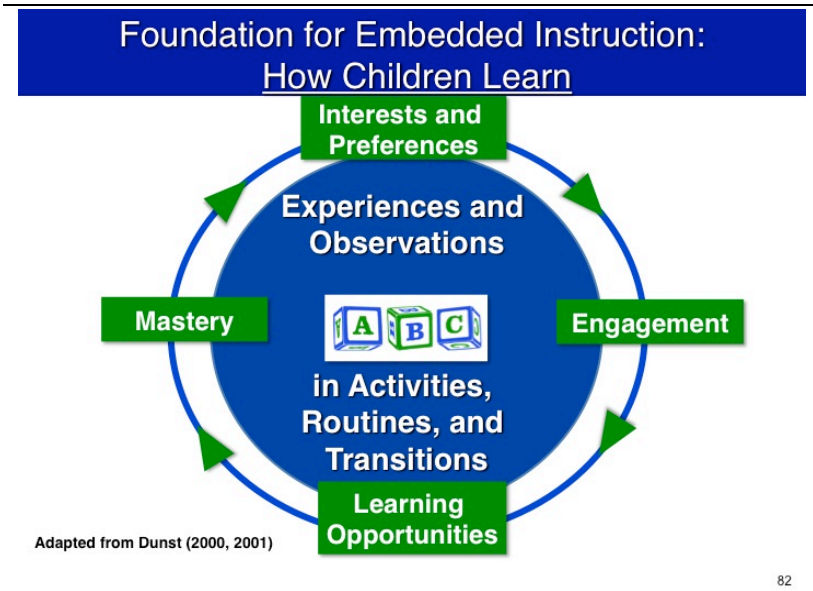
**Notes:**


Making Changes
What to Teach:
Priority Learning
Targets
When to Teach:
Activities, Routines,
and Transitions
How to Teach:
Complete Learning
Trials
How to Evaluate:
Monitor Implementation
and Child Progress
80

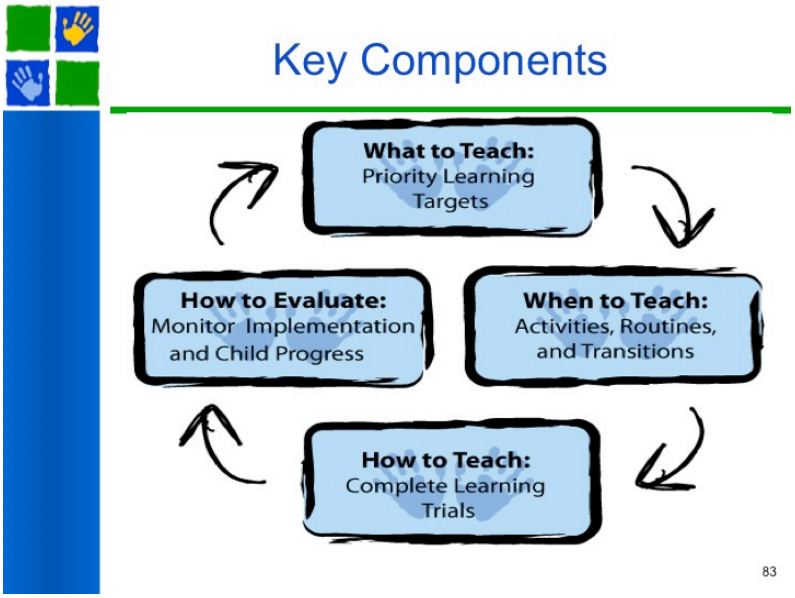
**Notes:**


Embedded Instruction
for Early Learning
Tools for Teachers
Looking Back
(and Ahead!)
81

**Notes:**


Foundation for Embedded Instruction:
How Children Learn
Interests and Preferences
Experiences and Observations
Mastery
Engagement
in Activities, Routines, and Transitions
Learning Opportunities
Adapted from Dunst (2000, 2001)
82

**Notes:**


Key Components
What to Teach:
Priority Learning Targets
When to Teach:
Activities, Routines, and Transitions
How to Teach:
Complete Learning Trials
How to Evaluate:
Monitor Implementation and Child Progress
83

**Notes:**

| 14 Key Practices for Embedded Instruction | |
|---|---|
| **What to Teach** | 1. Activities to support engagement and learning of all children |
| | 2. Activity-focused assessment to inform priority instructional learning targets |
| | 3. Break down larger goals |
| | 4. Write priority learning targets |
| **When to Teach** | 5. Select activities, routines, and transitions for embedded instruction |
| | 6. Plan which and how many instructional learning trials o implement |
| | 7. Develop an activity matrix |
| **How to Teach** | 8. Use systematic instructional strategies with fidelity |
| | 9. Implement instructional learning trials that include an antecedent, additional help to elicit the learning target behavior if the behavior does not occur, and an appropriate consequence |
| | 10. Implement massed, spaced, or distributed instructional learning trials |
| | 11. Implement frequency, intensity, and duration of instruction needed to address phase and pace of learning |
| **How to Evaluate** | 12. Implement strategies to determine *Am I doing it?* |
| | 13. Implement strategies to determine *Is it working?* |
| | 14. Make data-based decisions about whether changes are needed |

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## High Quality Activities





85

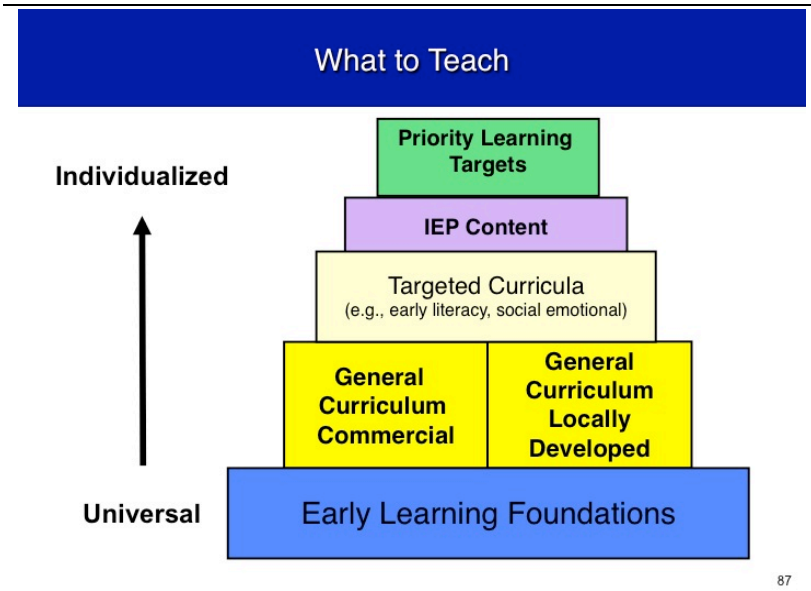
**Notes:**

## Embedded Instruction Builds on Intentional Teaching

| Intentional Teaching | Embedded Instruction |
|---|---|
| ▪ Clearly defined learning objectives | ▪ What to Teach |
| ▪ Play- or activity-based | ▪ Where and When to Teach |
| ▪ Instructional strategies likely to help children achieve learning objectives | ▪ How to teach |
| ▪ Continually assess progress and adjust strategies based on assessment | ▪ How to Evaluate |

86

**Notes:**


What to Teach
Individualized
Priority Learning Targets
IEP Content
Targeted Curricula
(e.g., early literacy, social emotional)
General Curriculum Commercial
General Curriculum Locally Developed
Universal
Early Learning Foundations
87

**Notes:**


Identifying Learning Targets
First Priority Learning Target
"Orients book correctly"
Next Priority Learning Target
"Turns pages one at a time"
Next Priority Learning Target
"Touches and vocalizes or verbalizes at picture"
Individualized Goal
"Demonstrate functional use of books"
FL Preschool Foundations
IV: Language, Communication, and Emergent Literacy
F: Emergent Reading
1.b. Child interacts appropriately with books and other materials in a print-rich environment.
88

**Notes:**

## Priority Learning Targets

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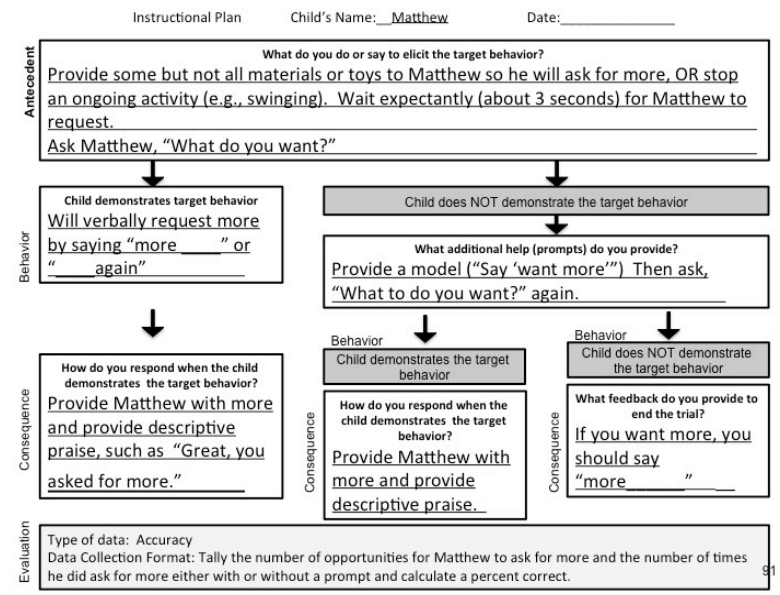
**Notes:**

## Activity Matrix

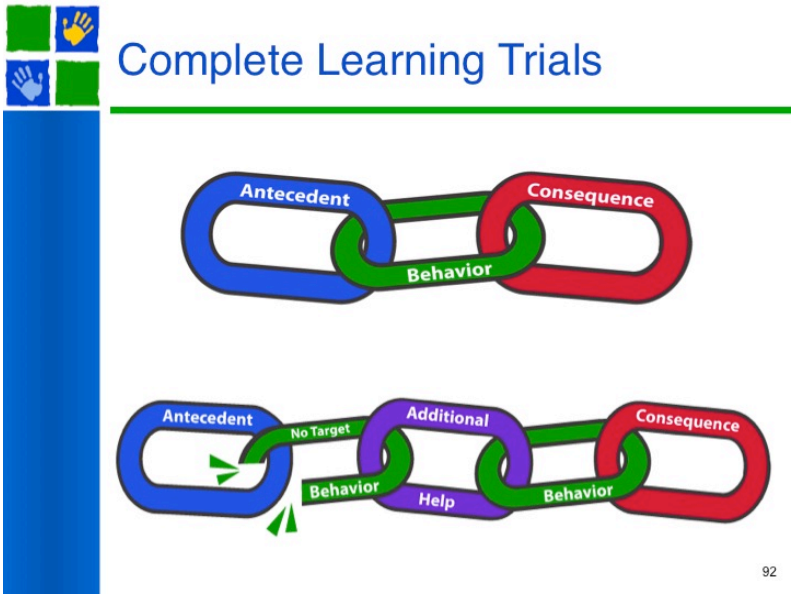
| | Mia | Matthew | Leo |
|---|---|---|---|
| **Arrival** | Verbally name colors - 3 | Follow a two-step direction relating to the immediate context - 2 | Move up and down stairs without assistance - 2 |
| **Circle** | Name object in a picture or book- 2 | Move objects or himself in relation to another object or location - 3 | Will express his needs to adults and peers using 2-3 word sentences - 2 |
| **Outside** | Ask peer or adult for a object- 3<br>Indicate big/little objects- 2 | Move objects or himself in relation to another object or location – 5<br>Use 2-word phrases to request more - 3 | Move up and down stairs without assistance - 2 |
| **Snack** | Ask peer or adult for a object- 2 | Use two word phrases to request more - 4 | Will express his needs to adults and peers using 2-3 word sentences - 3 |
| **Class Activity** | Verbally name colors - 4 | Hold adapted paint brush and make markings - 4 | Use a chair or table to stand up from the floor without adult support - 2 |
| **Departure** | Indicate big/little objects- 2 | Move objects or himself in relation to another object or location - 2 | Move up and down stairs without assistance - 2 |
| **Transitions** | Verbally names colors - 2 | Follow a two-step direction relating to the immediate context - 2 | Use a chair or table to stand up from the floor without adult support - 4 |

90

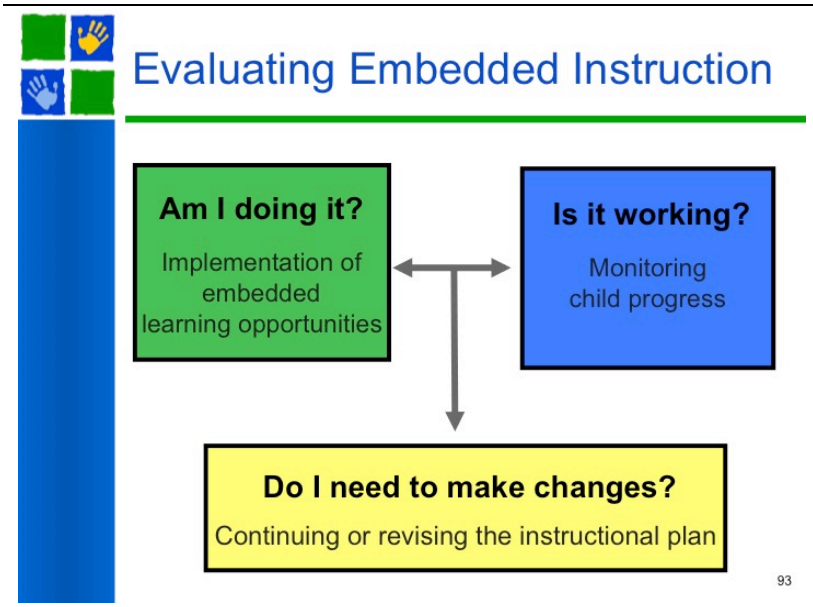
**Notes:**


Instructional Plan
Child's Name: Matthew
Date:
Antecedent
What do you do or say to elicit the target behavior?
Provide some but not all materials or toys to Matthew so he will ask for more, OR stop an ongoing activity (e.g., swinging). Wait expectantly (about 3 seconds) for Matthew to request.
Ask Matthew, "What do you want?"
Behavior
Child demonstrates target behavior
Will verbally request more by saying "more____" or "____again"
Child does NOT demonstrate the target behavior
What additional help (prompts) do you provide?
Provide a model ("Say 'want more'") Then ask, "What to do you want?" again.
Consequence
How do you respond when the child demonstrates the target behavior?
Provide Matthew with more and provide descriptive praise, such as "Great, you asked for more."
Behavior
Child demonstrates the target behavior
Consequence
How do you respond when the child demonstrates the target behavior?
Provide Matthew with more and provide descriptive praise.
Behavior
Child does NOT demonstrate the target behavior
Consequence
What feedback do you provide to end the trial?
If you want more, you should say "more_____"
Evaluation
Type of data: Accuracy
Data Collection Format: Tally the number of opportunities for Matthew to ask for more and the number of times he did ask for more either with or without a prompt and calculate a percent correct.
91

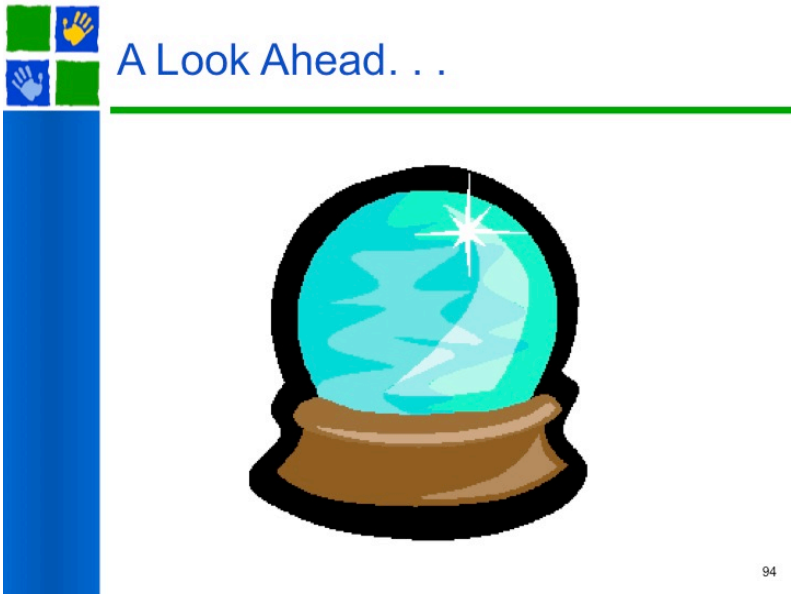
**Notes:**


Complete Learning Trials
Antecedent
Behavior
Consequence
Antecedent
No Target
Behavior
Additional
Help
Behavior
Consequence
92

**Notes:**


Evaluating Embedded Instruction
Am I doing it?
Implementation of embedded learning opportunities
Is it working?
Monitoring child progress
Do I need to make changes?
Continuing or revising the instructional plan
93

**Notes:**


A Look Ahead. . .
94

**Notes:**


Embedded Instruction
for Early Learning
Tools for Teachers
Tools to support..
What to Teach,
When to Teach,
How to Teach, and
How to Evaluate!
Thank you for your participation!
95

**Notes:**

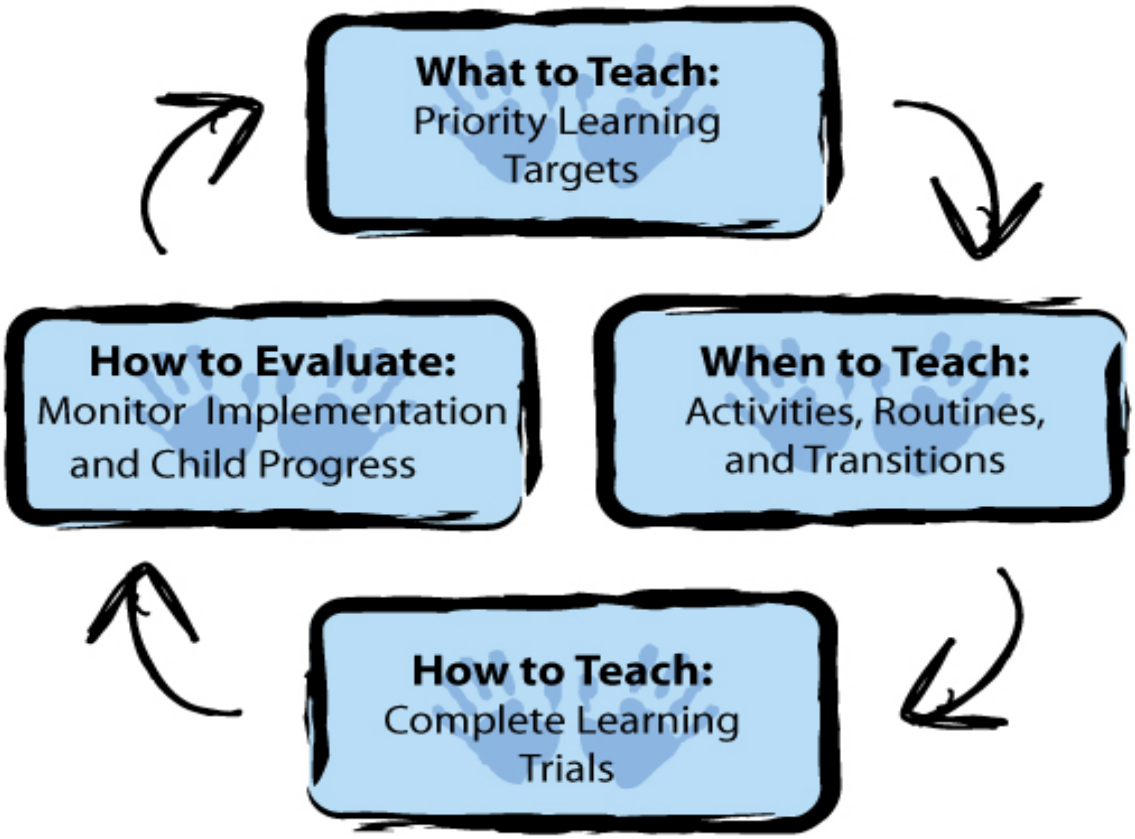
**Notes:**

# Practice Guide

# Key Components of Embedded Instruction

Embedded instruction is an approach to instruction that promotes child engagement and learning in everyday activities, routines, and transitions. This is accomplished by identifying *times* and *activities* when *instructional procedures* for teaching a child's priority learning targets are *implemented* in *ongoing [naturally occurring] activities, routines, and transitions*.

Embedded Instruction focuses on:




**This guide will focus on 'How to Evaluate'.** The 'How to Evaluate' component of embedded instruction includes key practices related to collecting, displaying, and interpreting data to determine (a) whether you are implementing embedded instruction with fidelity (i.e., *Am I doing it?*), (b) whether children are making progress on their priority learning targets (i.e., *Is it working?*), and (c) whether changes to your instruction are needed (*Do I need to make changes?)*.

# How to Evaluate

## How to Evaluate: Key Practices

12. Implement strategies to help determine whether I am implementing instructional learning trials with fidelity (i.e., *Am I doing it?).*

13. Implement strategies to help determine if children are making progress on their priority learning targets (i.e., *Is it working?*).

14. Make data-based decisions about whether changes are needed to my instruction by considering (a) *Am I doing it?* and (b) *Is it working?*

# Three Key Evaluation Questions

## Am I doing it?

The first question is related to your (or other team members') implementation of embedded instruction. This means using strategies to help evaluate whether you are implementing embedded instruction and whether you are implementing A-B-C components so **complete learning trials** occur. Data should be collected about when learning trials occur for a priority learning target and whether implementation of the learning trial components results in complete learning trials. A term used to refer to this type of evaluation is "fidelity of implementation." Three questions are relevant to help address the evaluation of implementation fidelity: (1) Are learning trials occurring in the activities in which we planned for them to occur?, (2) Are the number of planned trials occurring in these activities?, and (3) Are the components (the A-B-Cs) implemented so that complete learning trials occur?

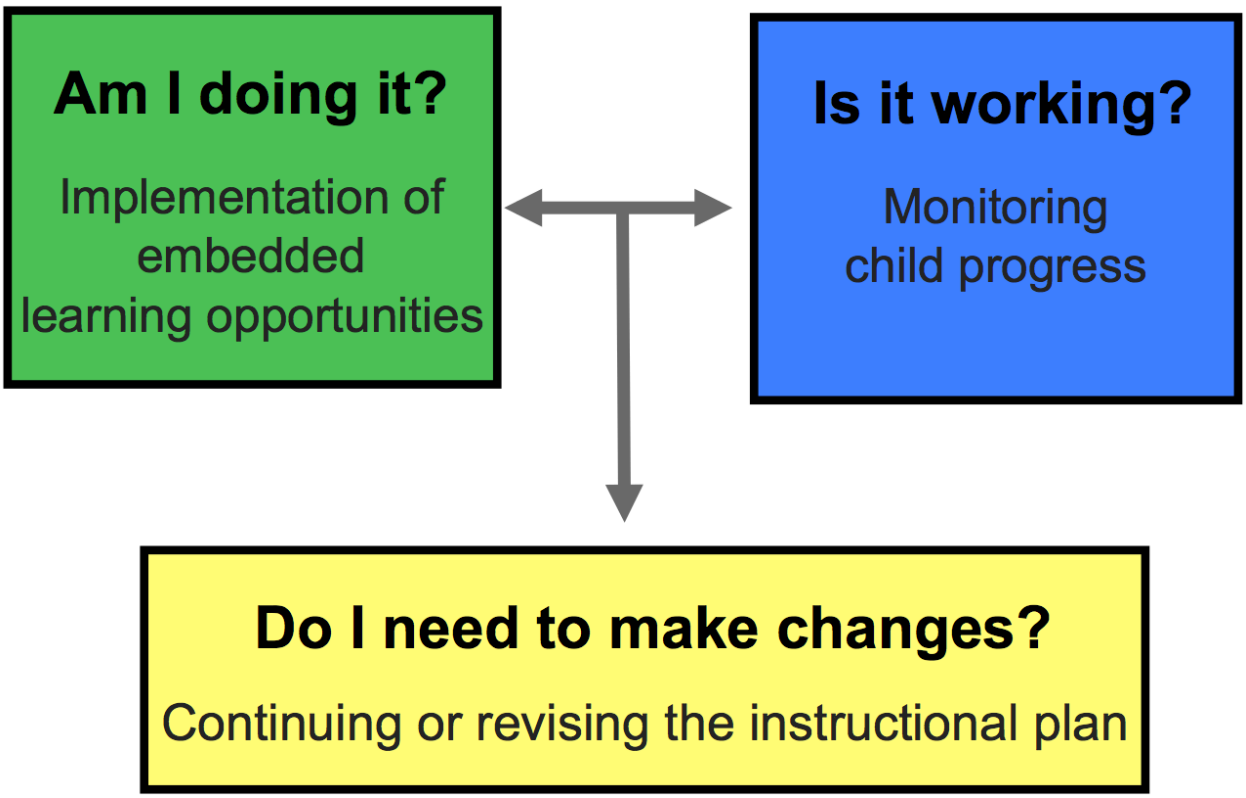
## Is it working?

The second question helps determine whether embedded instruction is working for a child by collecting data on whether the child is acquiring, maintaining, mastering, generalizing, or adapting priority learning target behaviors. For example, you might measure the extent to which the child is learning a new skill or using the skill across different people or settings. Monitoring child progress on learning targets helps answer the question, "Is it working?"

## Do I need to make changes?

The third question involves making data based decisions about whether changes are needed to your embedded instruction plan, how you implement the plan, or the priority learning targets established for a child. To answer question 3, you need to integrate and analyze evaluation data related to '*Am I Doing it*?' and '*Is it Working*?'

Here is a diagram of the three key questions for evaluating embedded instruction.




This diagram shows the relationship between "*Am I doing it*?" and "*Is it working*?". Answering these two questions helps you decide whether you should continue with or revise your embedded instruction plan.

# Am I Doing it?

# Implementation Fidelity

There are three key questions to consider when evaluating whether embedded instruction is implemented as planned. Collecting data on these questions helps you answer the question, '*Am I Doing it*?'

### 1. Are learning trials occurring in the activities in which we planned for them to occur?

Review your planning documents to determine how many learning trials you planned to implement. There are several ways you can review how many trials you planned to deliver. For example, you could review your activity matrix to see how many trials you planned for a priority learning target or you could review how many learning trials were planned for an activity, routine, or transition.

### 2. Are the number of planned trials occurring in these activities?

Determine how many learning trials have been implemented by collecting data. Data collection is not likely to happen unless it is planned. This involves deciding how often implementation data will be collected, how these data will be collected, and who will collect the data.

Data can be collected on an ongoing basis throughout the day or it can be collected using a planned [probe] schedule. The probe approach is a way to collect data on a regular, but not continuous basis. For example, you might decide to collect data during one activity each day or you might collect data on one child each day. The goal is to make sure that you are collecting data for each child's priority learning target during all activities on a regular (probably weekly) basis.

### 3. Are the components (the A-B-Cs) implemented so that complete learning trials occur?

Examine implementation data to evaluate whether you implemented the trials accurately. Ask the following questions related to a complete learning trial:

- → Did you implement complete learning trials (A-B-Cs)?
- → Were the **antecedents** specified on the plan available and appropriate?
- → Did the **behavior** specified on the plan occur?
- → If **additional help** was needed, was it provided, and were the steps of the correction procedure followed correctly?
- → Were planned **consequences** delivered?
- → If the target behavior did not occur after additional help was provided, was feedback delivered to end the trial?

After you address the three key questions:

### Graph Your Data—Compare planned trials to implemented trials

Compare how many trials were planned and how many trials were implemented. Data can be compared at two levels: (a) global, focused on comparing how many total trials you planned versus how many you implemented across all activities, routines, or transitions for each priority learning target; or (b) specific, focused on comparing planned versus implemented trials for each priority learning target in each activity, routine, or transition.

### Decide whether you have implemented embedded instruction as planned

Decide whether you have implemented embedded instruction as planned. If you decide that implementation did not occur as planned, then you will need to consider whether and how the plan should be revised. Case Study: Embedding Instruction with Davion
Let's look at how we might evaluate implementation of embedded instruction. We will use Davion and his priority learning targets to illustrate how you would evaluate implementation of embedded instruction to address the question "*Am I Doing it*?"

# Case Study: Embedding Instruction with Davion

Let's look at how we might evaluate implementation of embedded instruction. We will use Davion and his priority learning targets to illustrate how you would evaluate implementation of embedded instruction.

Let's look at some of the priority learning targets written for Davion along with the activity matrix created for him to see what his teacher planned.

Priority Learning Target 1: Davion will initiate play with another child by asking to join in after a teacher model during center activities and outdoor play **at least once a day** for five consecutive days

Priority Learning Target 2: When asked, Davion will correctly count out sets of 1-5 moveable objects (such as blocks, toy cars, crackers, etc.) without help from an adult during free play, snack or clean-up time for 80% of the opportunities across a day for two consecutive days.

| **Activities** | **Davion's priority learning targets and number of learning trials planned** |
|---|---|
| Arrival | |
| Free Play/Centers | *Initiate play with another child (2)*<br><br>*Counting sets of 1-5 objects (2)* |
| Circle | |
| Outside | *Initiating play with another child (1)* |
| Snack | |
| Free Play/Centers | *Initiating play with another child (1)* |
| Circle/Departure | *Counting sets of 1-5 objects (1)* |
| Transitions | |

**Review:** Number of trials planned.
Priority Learning Target 1 (Initiating play with another child) = 4
Priority Learning Target 2 (Counting sets of 1-5 objects) = 3

**Implement the instructional plan (deliver learning trials using A-B-C) and collect data on implementation**

Look at the data collection sheet to determine how many learning trials were implemented to address each learning target across activities, routines, and transitions during the day.

| Davion's Learning Targets | Number of Learning Trials Delivered |
|---|---|
| *Initiating play with another child* | *2* |
| *Counting sets of 1-5 objects* | *3* |
| **Total** | *5* |

Two trials were delivered for priority learning target 1 and three trials were delivered for priority learning target 2 across activities, routines, and transitions during the day.

Compare the number of learning trials that were planned for each priority learning target with the number of learning trials implemented.

| Davion's Learning Targets | # planned | # delivered | Difference |
|---|---|---|---|
| *Initiate play with another child* | *4* | *2* | *2* |
| *Counting sets of 1-5 objects* | *3* | *3* | *0* |
| **Total** | *7* | *5* | *2* |

Fewer trials than originally planned were delivered for priority learning target 1. The same number of trials were implemented as were planned for priority learning target 2.

Examine the quality of implementation to see if all learning trial components (A-B-Cs) were delivered for each trial for each priority learning target.

| Learning Trials | Antecedent | Child Behavior | Additional Help (Prompts) | Consequence/ Feedback | A-B-C Correctly Implemented |
|---|---|---|---|---|---|
| *Initiate play with peers* **(4)** | **A** | **B** | **Help** | **C** | **Yes/No** |
| Trial 1 | √ | √ | √ | √ | *Yes* |
| Trial 2 | √ | √ | *N/A* | √ | *Yes* |
| Trial 3 | *NOT DELIVERED* | | | | *No* |
| Trial 4 | *NOT DELIVERED* | | | | *No* |
| *Counts sets of 1 -5* **(3)** | **A** | **B** | | **C** | **Yes/No** |
| Trial 1 | √ | √ | √ | √ | *Yes* |
| Trial 2 | √ | X | X | X | *No* |
| Trial 3 | √ | √ | √ | √ | *Yes* |

*√ = As planned*

*X = Not implemented*

When you examine the data for priority learning target 1, (initiate play with peers) you see that two trials were not implemented. Evan though all three trials were implemented for priority learning target 2 (counts sets of 1-5), one of the trials (Trial 2) was not implemented correctly because the target behavior did not occur and there was no additional help or feedback to complete the trial.

After you review the quality of your implementation with respect to the A-B-Cs, you might decide to keep using the same plan or you might decide the plan needs to be revised. Before making this decision, however, you need to consider Davion's progress data on these two priority learning targets. At this point, you have gathered important evaluation data about the need to provide additional learning trials for priority learning target 1 (initiate play with peers) and the need to ensure additional help and feedback are provided when the target behavior does not occur for priority learning target 2 (counts sets of 1-5).

# Is it Working?

# Considerations for Monitoring Child Progress

Monitoring child progress is something you already do as a teacher. It is also an essential part of evaluating embedded instruction. Embedded instruction focuses on children learning skills in the activities and settings in which they need to use these skills. We have referred to this as a meaningful context for learning. When we evaluate child progress in embedded instruction, it is important that we evaluate a child's use of targeted skills within the ongoing activities, routines, and transitions of the classroom. Monitoring child progress will help you decide if adjustments need to be made in your implementation of embedded instruction. The data you collect will help you locate and identify possible barriers to child progress and determine other instructional strategies that might be more effective or efficient for learning skills. When you begin monitoring child progress, the following questions can help guide you:

- What behaviors are targeted? What type of data do I need?
- How should I collect data for different types of behaviors?
- How often should I collect data? When? Where? And who should collect data?
- How should I display, summarize, and analyze child data?
- How should I interpret and use child data?

In the following pages, we provide additional information to help you answer these questions.

# What Behaviors are Targeted?

Typically, child behaviors fall into one of the following categories:

- Motor
- Adaptive
- Social
- Cognitive and pre-academic
- Communication

Some preschool programs might use different categories. The categories are less important than the focus (i.e., the desired behavior) of the priority learning target you have selected.

To evaluate child performance or monitor child progress, priority learning targets must be *specific*, *observable*, *measurable,* and have *clearly stated conditions and criteria for performance*.

**Why do you need observable priority learning targets?**
Statements of observable behavior are important because they describe what you will see or hear the child do. If you can observe behavior, you can count it or measure it. An observable priority learning target is one that can be (a) seen or heard, and (b) at least two people can agree has occurred.

**Why do you need measurable priority learning targets?**
To evaluate child performance or monitor child progress, you need to consider what dimensions of the behavior are important to measure. For example, do you want to know how often a child does something or how long the child does something?

Here are some examples of observable and measurable behaviors:

[Child] will **independently greet at least two peers by patting, touching, or smiling** when they arrive at the classroom in the morning for five consecutive days.

[Child] will **independently manipulate at least four materials/objects/toys with both hands** during centers and free play activities for five consecutive days**.**

[Child] will **independently pedal a tricycle forward at least 25 feet** each day for 4 days during playground and gym activities.

Here are some examples of learning targets that are **not** observable or measurable:

[Child] will demonstrate understanding of shapes.

[Child] will participate during small group activities.

[Child] will respond to group directions.

**Why are conditions and criteria important?**

Measurable priority learning targets include the conditions under which the behavior will occur and a level of acceptable performance. Specifying the conditions under which the behavior will occur and the level of acceptable performance is called criterion performance.

Performance criteria specify the level of acceptable performance (e.g., independently, with supports, etc.) and how often the child is to perform the behavior to demonstrate he/she has met the criteria (e.g., four times for 3 consecutive days, twice for 5 consecutive days, etc.). With appropriately selected criteria, you will know when a child has achieved targeted performance. Performance criteria also guide your decision about how often you need to collect data on a specific priority learning target.

Performance criteria will vary depending on the phase of learning (e.g., acquisition, fluency, maintenance, generalization, and adaptation) the priority learning target is developed to address. Review the following examples of how the same priority learning target has been changed to reflect different phases of learning.

**Acquisition:**

> Matthew will initiate play with **a preferred peer** either verbally or nonverbally **following a verbal prompt from his teacher** in **free-choice activities, 6 times across 4 days.** [Here Matthew is acquiring the skills of initiating play with a preferred peer in one activity with help from his teacher.]

**Fluency:**

> Matthew will initiate play with **a preferred peer** either verbally or nonverbally in **free-choice activities, 6 times across 4 days.** [Here Matthew is becoming fluent with initiating play with a preferred peer in one activity without adult help.]

**Maintenance:**

> Mathew will initiate play **with a peer** either verbally or nonverbally during **regular classroom activities and routines at least 2 times per day for 6 weeks**. [Here we are evaluating whether Matthew maintains his ability to initiate play with peers over time. Data on his performance could be collected weekly.]

**Generalization:**

> Mathew will initiate play with **at least two peers** either verbally or nonverbally in **centers and playground activities, 6 times in total for 2 consecutive days.** [Here Matthew is learning to generalize initiating play with two peers across two different activities.]

# What Type of Data Do I Need?

Identifying the features and characteristics of the targeted behavior will influence the type of data you collect.

**Different types of data you collect might include:**

- → Frequency
- → Accuracy
- → Duration
- → Latency
- → Intensity
- → Endurance

Each type of data is defined and illustrated through abbreviated priority learning target examples below:

**Frequency:** The number of times a child demonstrates a target behavior within a specified period of time. The period of time can be an interval (e.g., 5 minutes) or an entire activity/event (e.g., circle, snack, centers). The best way to collect frequency data is by counting it.

> Examples:
> [Child] will sign "more" three times a day.
> [Child] will verbally answer questions three times during circle time.
> [Child] will initiate interaction with his/her peers two times within a 10-minute observation.
> [Child] will use more than 20 different utterances across four daily activities and routines.

**Accuracy:** The extent to which a child's target behavior is performed correctly or how well a child demonstrates a behavior. At times, the amount of assistance required (e.g., independently, without support, with hand-over-hand) or whether the child needs reminders or contextual cues can be noted. To collect accuracy data, you can calculate the percentage of correct trials or record the level of assistance required to finish the task by using a behavior scale.

> Examples
> [Child] will spell his/her first name correctly.
> [Child] will count 10 objects.
> [Child] will independently hang his/her coat without reminders.

**Duration:** The amount of time a target behavior lasts (i.e., the length from beginning to end). The way to collect duration data is by timing it.

Examples:
[Child] will stay at the table or game area and participate in the game for at least 5 min.
[Child] will stand on both feet, holding onto to a table or chair, without additional adult support for 30 sec.

**Latency:** How long it takes a child to initiate or demonstrate the target behavior (i.e., response onset) after an antecedent has occurred (i.e., prompt or stimulus is presented). The way to collect latency data is by timing the elapsed time between the antecedent and the onset of the behavior.

Examples:
[Child] will verbally answer, “What do you want?” within 1 min. of being asked the question.
[Child] will start to pick up with at least one toy within 2 min. of a teacher saying, “It’s time to clean up” during centers.

**Intensity:** The amount of force with which a child demonstrates the target behavior (i.e., increased force or softening). Typically, a rating scale is the best way to collect intensity data.

Examples:
When playing with peers, [Child] will touch peers (e.g., hugging, patting, or holding hands) using a ‘soft touch’ (i.e., not hurting or hitting peers).
When indoors, [Child] will use a talking voice (i.e., not shouting) to communicate.

**Endurance:** How long, how far, or how many times a child can emit a target behavior before she/he fatigues (e.g., how many steps can a child take, how many steps can a child climb, how far can a child walk using a walker). There are various ways to collect endurance data based on the behavior criteria, such as rating scales, counting, or timing.

Examples:
[Child] will walk 17 feet without stopping.
[Child] will pedal forward and steer bicycle at least 16 feet.

# How to Collect Data?

After you determine what type of behavior you are measuring, the performance conditions, and criteria, you can decide on a plan for how you will evaluate child progress.

Data typically are collected relative to the nature of the child behavior and the conditions and criteria associated with priority learning targets. Here are some options to consider.

- → If you want behavior to happen more often > count it—frequency
- → If you want behavior to be accurate > calculate % correct—accuracy
- → If you want to record level of prompting and supporting > descriptive notes or rating scales – accuracy
- → If you want to record how long a behavior lasts or the onset of a response > time it—duration or latency
- → If you want to describe the behavior (its form and topography) > take notes
- → If you want to document or obtain a permanent record of the behavior > collect products or work samples

**How often should I collect data?**

You need to decide *how often* you will collect data on the child's performance. Frequency of data collection is influenced by the nature of the behavior. Some of your priority learning targets might only occur once or twice a day while others might occur often throughout the day. Consider what is feasible given the numbers of adults and children in the classroom and the demands on your time during particular times of the day. You want to have enough data to help you decide how well the child is performing or whether she or he is making progress. We know a child's performance might vary somewhat from day to day but the goal is to gather enough data that you have a picture of the child's "typical" performance with respect to the priority learning target. It often is helpful to examine your schedule carefully and plan how often it is feasible for you to collect data while considering how much data you will need to obtain a complete picture of the child's performance. This gives you time to prepare and ensures that you are devoting time to these important evaluation activities.

Embedded instruction occurs daily across activities, routines, and transitions, but data collection is likely to occur at specific times during the week using probes. Plan and schedule to collect probe data based on what you want to know about the child's performance.

**When should I collect data?**
As you look at your schedule, consider when to collect data. Deciding when to collect data on child behaviors might involve four considerations:

1. When the skill is being taught—If you are planning to teach the skill during snack, centers, and outdoor play, that information will be useful in knowing when to collect data.
2. When the child needs to be able to use the skill—For example, while you might be planning to teach choice-making during snack, centers, and outdoor play, you might also want to measure whether the child makes choices during other activities that would be natural times for the child to make choices.

3. When the behavior is most likely to occur—For example, you might see the child make a choice occasionally during large group while there might be many opportunities for the child to make choices during center time. Thus, observing during center time would provide more opportunities for observing the target skill than observing during large group time.

4. What conditions and performance criteria are specified—If you have specified multiple activities, such as arrival, centers, snack, and outdoor play, you should collect a sample of data from each of these activities to see if a child is consistently demonstrating the target behavior across different settings.

**Where should I collect data?**

The next step is to consider *where* the data will be collected. The activities in which data collection should occur might depend on whether the child is acquiring a skill, becoming fluent with the skill, maintaining the skill, or generalizing. For example, if the child is acquiring a skill, it would be important to collect data on the child's use of the skill in the activity in which the child is learning the skill. However, if you are interested in determining if the child generalizes the skill across activities, you might want to collect data in an activity in which instruction is not targeted, but which represents a context in which the skill would be functional. Furthermore, if you want to know if a child is fluent with a skill, collect data during authentic opportunities to use the skill.

**Who should collect data?**

It is also important to designate *who* will be collecting the data. As discussed earlier, it will be important to make a data collection schedule. This can be done in a variety of ways. For example, the teacher could make a matrix that is primarily a data collection matrix – combining all of the decisions you just made for data collection. The data collection matrix specifies who collects the data, during what activities, and on what days. An example of a data collection matrix can be seen on the next page.

# Data Collection Matrix

| Schedule | Mia | Matthew |
|---|---|---|
| **Arrival** | Verbally name colors<br>**Teacher-T,TH** | Follow a two-step direction<br>**Teacher-W,TH** |
| **Free Play** | Name object in a picture or book<br>Indicate big/little objects<br>**Assistant-Weekly** | Follow a two-step direction<br>**Teacher-W,TH** |
| **Circle** | Name object in a picture or book<br>**Assistant-Weekly** | Move objects or himself in relation to another object or location<br>**Team-Rotate Every 3rd Day** |
| **Snack** | Ask peer or adult for a object<br>**Team-Daily (1 week)** | Use two word phrases to request more<br>**Teacher -Weekly** |
| **Class Activity** | Verbally name colors<br>**Teacher-T,TH** | Hold adapted paint brush and make markings<br>**Assistant M,W,F** |
| **Departure** | Indicate big/little objects<br>**Assistant-Weekly** | Move objects or himself in relation to another object or location<br>**Team-Rotate Every 3rd Day** |

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# Displaying and Analyzing Data

Selecting an "appropriate way" to display the data will depend on what you would like to know. Research suggests that graphing is an effective way to display data. When we use graphs, we are able to describe the child's performance and progress as well as make predictions about future performance. Different graphs can also help us identify relationships between the child's performance and other variables (e.g., activities or time of day).

You can use:

- An outline of written notes
- Tables with tally marks
- Pie charts
- Graphs (e.g., bar graph, line graph)

When deciding how to display data, you should consider with whom you will be sharing the data. If your main purpose is to share the data with the child's parents, consider which display will be the clearest and most helpful for them in understanding their child's progress.

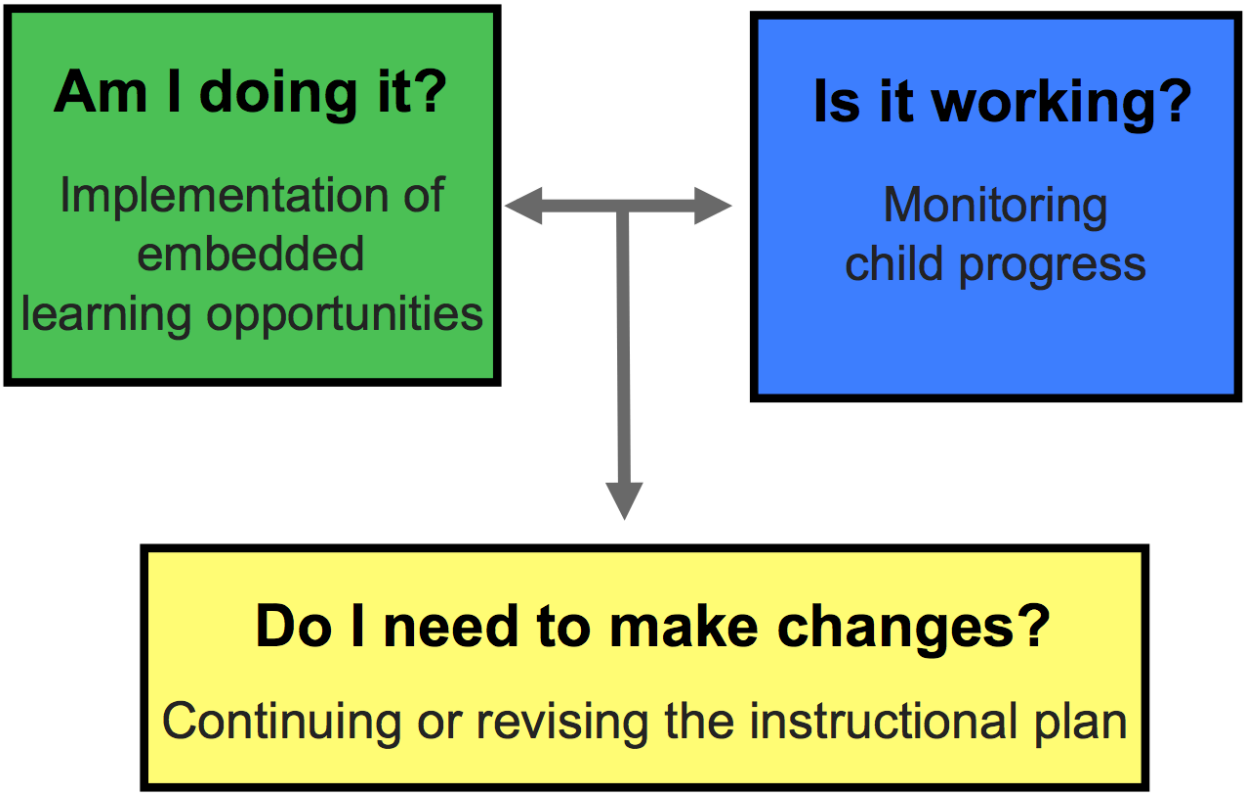
Let's think about the different things that the child's data can tell us. Here are some questions that data can help us answer.

- Which behaviors the child does independently?
- What types of supports, adaptations, or assistance does the child need to perform a specific behavior?
- How long does the child perform the behavior?
- How accurately does the child perform the behavior?
- Under what conditions under does the behavior occur?
- When is intervention successful?
- Is the child making progress?
- What influences child performance?

# Do I Need to Make Changes?

# Making Decisions

### Remember the Three Key Questions




The diagram above shows the relationship between "*Am I doing it*?" and "*Is it working*?". Answering these two questions helps you decide whether you continue with or revise your embedded instruction plan.

## Continuing or Revising the Instructional Plan

You need to evaluate how well you are implementing the planned instruction before determining if embedded instruction is working for the child. You might decide that you have not implemented embedded instruction as planned. This suggests you need to work on consistently to implement your plan. If you have implemented embedded instruction as planned, but it is not working for the child, you might need to adjust the instructional plan. If the child is making progress, you may continue the plan or choose to develop a new priority learning target and/or plan.

Using both sources of evaluation data (*Am I doing it?* and *Is it working?*) is necessary for making data-based decisions about whether changes are needed.

What to do if the Child is not Making Progress

If the child's data show that he or she is not making progress, here are some issues to consider:

- Look at the implementation data you collected:
    - Examine the amount of planned trials you actually delivered
    - Compare the number of complete learning trials delivered to the number of incomplete learning trials
- Revisit your plan. Changes you might consider are:
    - Adjusting the amount of learning trials you have planned for that priority learning target or activity
    - Changing antecedents or consequences
    - Changing accommodations, modifications, or instructional procedures
    - Changing the activities in which you embed learning opportunities
    - Changing the behavior targeted (e.g., if the behavior is too hard for the child, consider breaking it down to a more achievable behavior)
- Closely examine days when the child is more responsive
    - Reconsider the child's preferences for times of days, activities, materials, or certain peers that may make a difference in his or her response
    - Think about differences in the way you delivered trials on days that the child was more responsive

# What to do if the Child has Made Progress or Achieved the Priority Learning Target

You might adjust the performance criteria by considering the different phases of learning (i.e., acquisition, fluency, maintenance, generalization, and adaptation). For example, if the data indicate the child has met the performance criteria with respect to acquisition you might change the criteria to reflect fluency.

Another option is to increase the complexity of the desired behavior. For example, you might have the child follow three-step directions rather than one-step directions.

You might decide to write a new priority learning target if the child has met criteria for the specified target. This decision will be based on activity-focused assessment data about what additional skills the child needs to learn to be engaged and to access and participate in the early learning environment.

# Examples of Data-Based Decision Making

## Frequency Data

Frequency data give information about the number of times a child demonstrates a target behavior within a specified period of time. The period of time can be an interval (e.g., 5 minutes) or an entire activity/event (e.g., circle, snack, centers).

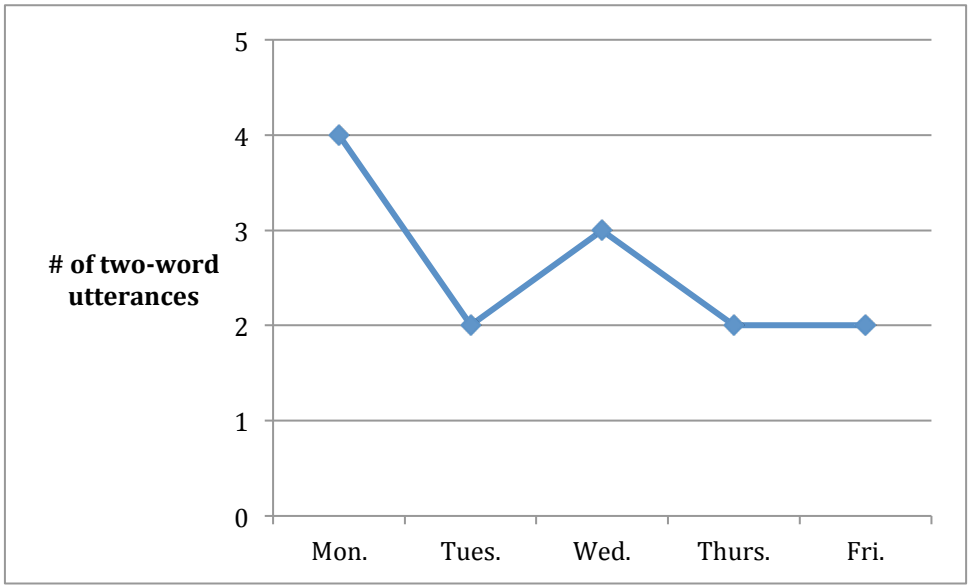
### Example Priority Learning Target:

Mia will produce 1- to 2-word combinations to request objects (e.g., I want ____, ____ please) from adults or peers across at least 3 activities, **5 times per day** for 3 consecutive days.

### Collect Data

| Day | Activity | Count |
|---|---|---|
| Monday | Arrival | |
| | Snack | // |
| | Outside | / |
| | Class activity | / |
| Total | | 4 |
| Tuesday | Arrival | |
| | Snack | / |
| | Outside | / |
| | Class activity | |
| Total | | 2 |
| Wednesday | Arrival | |
| | Snack | / |
| | Outside | / |
| | Class activity | / |
| Total | | 3 |
| Thursday | Arrival | / |
| | Snack | |
| | Outside | |
| | Class activity | / |
| Total | | 2 |
| Friday | Arrival | |
| | Snack | |
| | Outside | // |
| | Class activity | |
| Total | | 2 |

## Display Data




## Interpret Child Performance Data (*Is it Working?*)

When you look at Mia's performance over the week, you see there is variability in Mia's performance. You can also see she is not meeting the criteria of 5 times per day.

## Interpret Data on Your Implementation (*Am I Doing it?*)

Your assistant teacher has collected the data on your implementation and together, you review it to see if the quality of implementation is affecting Mia's performance. When you look at the data, you determine you are consistent in following your plan. You are delivering the planned number of learning trials and they are complete learning trials.

## Make a Decision (*Do I Need to Make Changes?)*

Where should you go from here? You have implemented embedded instruction as planned, but Mia is still not making progress toward the priority learning target. At this point, you should revisit your plan and make some changes. On your plan, you have designated the antecedent to be a question. When you review Mia's performance, you decide that a question is not a sufficient antecedent in order to elicit the targeted behavior. For the following week, you decide to change your plan and use a question paired with a visual prompt as your antecedent. You will continue to collect data on Mia's and your performance to see if this new plan will work.

# Accuracy Data: Percent Correct

Accuracy data reflect the extent to which the child performs the behavior correctly or how well the child demonstrates the behavior. Accuracy can be measured by percent of correct demonstrations.

## Example Priority Learning Target

When asked, Davion will correctly **count out sets of 1-5 moveable objects** (such as blocks, toy cars, crackers, etc.) without help from an adult during free play, snack or clean-up time for **80% of the opportunities across a day for two consecutive days.**

## Collect Data

In order to measure the accuracy with which Davion is performing his target behavior, you must determine the performance standard. In this case, there are TWO pieces of information required to make this determination:

1. Is he performing the behavior indicated within the priority learning target?
   **Counting 1-5 objects without help during free play, snack or clean-up**
2. Is he performing the behavior to the standard indicated in the learning target?
   **80% of opportunities for two consecutive days**

To measure accuracy, you can examine the percentage of correct behaviors observed. One way to do this would be to make a table that allows you to tally the number of times Davion has an opportunity to perform the behavior and the number of times Davion performs the behavior according to the criteria specified in his priority learning target.

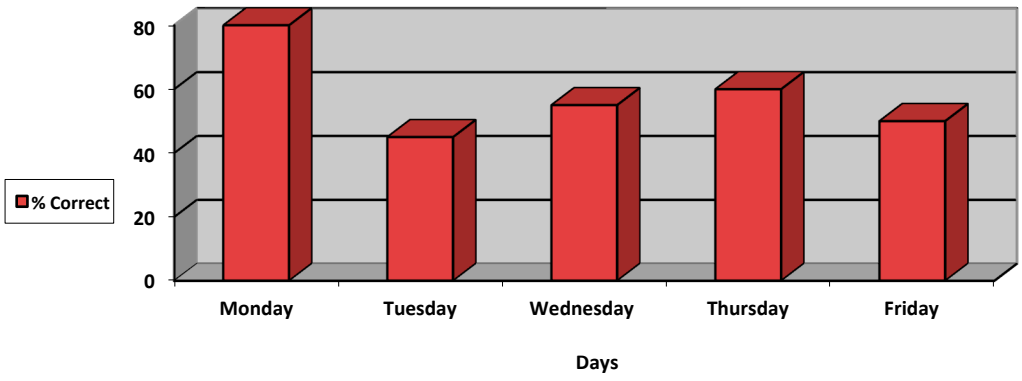
For example, the following table might be used to collect data during centers:

| Days | Activity | Target Behavior | Opportunities | # of Times and Percentage |
|---|---|---|---|---|
| **Monday** | *Centers-Blocks* | *///* | */////* | *3/5* |
| | *Cleanup Blocks* | *////* | *////* | *4/4* |
| | *Snack* | *//* | *///* | *2/3* |
| | *Free play* | *///* | *////* | *3/4* |
| | *Cleanup* | *////* | *////* | *4/4* |
| **Total** | | *16* | *20* | *80%* |
| Tuesday | *Centers-Blocks* | */* | *////* | *1/4* |
| | *Cleanup Blocks* | *//* | *////* | *2/4* |
| | *Snack* | *////* | *////* | *4/4* |
| | *Free play* | */* | */////* | *1/5* |
| | *Cleanup* | */* | *///* | *1/3* |
| **Total** | | *9* | *20* | *45%* |

| Days | Activity | Target Behavior | Opportunities | # of Times and Percentage |
|---|---|---|---|---|
| Wednesday | Centers-Blocks | / | //// | 1/4 |
| | Cleanup Blocks | / | //// | 1/4 |
| | Snack | //// | ///// | 4/5 |
| | Free play | /// | /// | 3/3 |
| | Cleanup | // | //// | 2/4 |
| **Total** | | 11 | 20 | 55% |
| Thursday | Centers-Blocks | /// | /// | 3/3 |
| | Cleanup Blocks | /// | //// | 3/4 |
| | Snack | /// | ///// | 3/5 |
| | Free play | / | //// | 1/4 |
| | Cleanup | // | //// | 2/4 |
| **Total** | | 12 | 20 | 60% |
| Friday | Centers-Blocks | // | //// | 2/4 |
| | Cleanup Blocks | // | //// | 2/4 |
| | Snack | // | //// | 2/4 |
| | Free play | /// | //// | 3/4 |
| | Cleanup | / | //// | 1/4 |
| **Total** | | 10 | 20 | 50% |

## Display the Data

Once you have collected data across multiple activities and days, you can display the data to determine the accuracy with which Davion is performing his priority learning target.



### Interpret Child Performance Data (*Is it Working*?)
Data on the percentage of counting sets of 1-5 objects performed by Davion shows that although he demonstrated the target behavior in 80% of opportunities presented to him on Monday, his performance on the same priority learning target was lower and inconsistent on following days. To identify possible reasons for the decrease in Davion's performance review your plan and activities in which you embedded your instruction.

### Interpret Data on Your Implementation (*Am I Doing it?*)
You find that Davion demonstrated the target behavior most often during snack time. After collecting data on your implementation of complete learning trials with Davion, your classroom assistant told you that when you were sitting next to him and providing systematic opportunities for him to practice, all of the learning trials you delivered were complete learning trials. She noted that that during play times and cleanup, you continued to deliver learning trials, but often times you didn't provide additional help for Davion when he didn't demonstrate the target behavior, because you were interacting with other children.

### Make a Decision (*Do I Need to Make Changes?)*
Based on the evaluation data from both your implementation and Davion's performance, you may decide to pay more attention to Davion's behavior and to deliver additional help when he does not demonstrate the behavior during free play and clean up activities. Your correct implementation will help Davion improve his counting and generalize it to the other settings. You may also review your planning form and try to distribute trials more carefully within activities and routines, so Davion has more opportunities to practice counting during activities and routines that are meaningful to him.

## Accuracy Data: Levels of Support

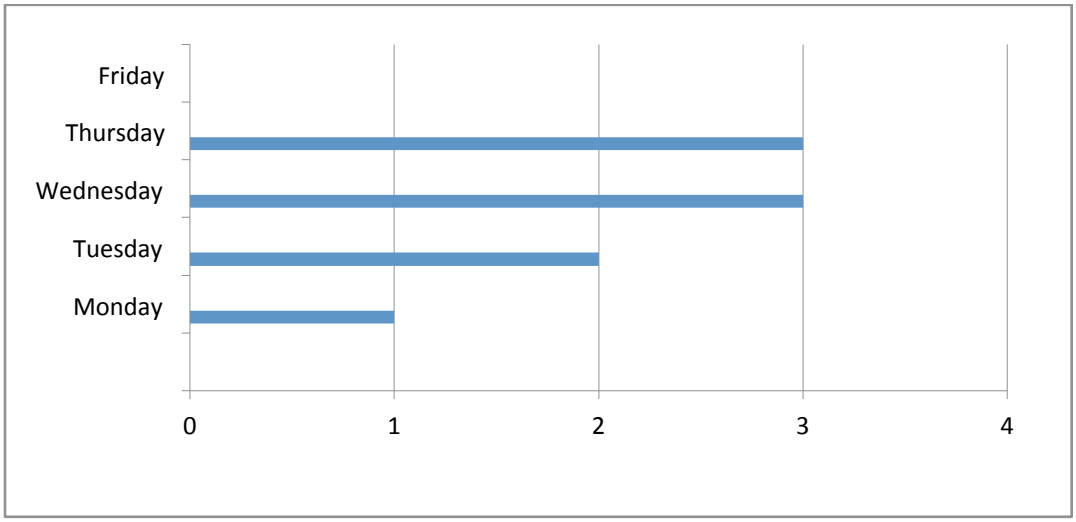
Accuracy data can also be measured by the amount of assistance a child requires (e.g., independently, without support, with hand-over-hand) to complete a task.

### Example Priority Learning Target
Matthew will use adapted scissors **with decreasing adult assistance to independently hold and cut** a variety of materials (e.g., paper, cloth, foam, and string) during variety of art and class activities. He will hold and cut items independently on 3 out of 4 opportunities each day for 4 consecutive days.

### Collect Data
In this example, based on your criterion, you collect data on the number of times Matthew uses adapted scissors independently during a school day. In other words, you are interested in documenting how often he performs the target skill. You may use a simple system composed of tally marks or a checklist. Your data collection sheet may look as follows:

| Weekly Data Collection Sheet | | | | | |
|---|---|---|---|---|---|
| Criterion: *He will hold and cut items independently on 3 out of 4 opportunities each day for four consecutive days.* | | | | | |
| Days | Trials | Performance<br>I = Independent<br>WS = With Support | | | # of Independent responses |
| Monday | 1 | I | **WS** | N/A | *1* |
| | 2 | I | **WS** | N/A | |
| | 3 | **I** | WS | N/A | |
| | 4 | I | **WS** | N/A | |
| Tuesday | 1 | **I** | WS | N/A | *2* |
| | 2 | **I** | **WS** | N/A | |
| | 3 | I | **WS** | N/A | |
| | 4 | I | WS | N/A | |
| Wednesday | 1 | **I** | WS | N/A | *3* |
| | 2 | **I** | **WS** | N/A | |
| | 3 | **I** | WS | N/A | |
| | 4 | I | WS | N/A | |
| Thursday | 1 | I | **WS** | N/A | *3* |
| | 2 | **I** | WS | N/A | |
| | 3 | **I** | WS | N/A | |
| | 4 | **I** | WS | N/A | |
| Friday | 1 | I | WS | **N/A** | *Child was not present.* |
| | 2 | I | WS | **N/A** | |
| | 3 | I | WS | **N/A** | |
| | 4 | I | WS | **N/A** | |

## Display Data




## Interpret Child Performance Data (*Is it Working?*)

You compare Matthew's performance, graphed above, with the criterion level of performance (**independently** holding and cutting on **3 out of 4 opportunities each day** for **four consecutive days**). From these data, you conclude that he is making progress towards his target behavior, but has not mastered the skill yet. On Wednesday and Thursday, he independently demonstrated the behavior 3 out of 4 opportunities. Then, he did not come to school on Friday. To ensure Matthew reaches his criterion you will need to collect more data next week.

## Interpret Data on Your Implementation (*Am I Doing it?)*

Data on your implementation of embedded instruction collected by your assistant teacher also showed that you delivered learning trials with 100% fidelity. That means that you set the stage for Matthew to demonstrate his target behavior and provided correct level of assistance as planned.

## Make a Decision (*Do I Need to Make Changes?)*

Data you collected about Matthew's performance on the target behavior indicate he is making progress, and data collected on your performance indicate that you are delivering complete learning trials as planned. This information might lead you to decide to keep working on the same behavior in next coming week without making any adjustment on your plan.

# Duration Data

Duration data reflect the length of time it takes to complete a response.

Duration can be expressed as:

- Total duration
- Duration per occurrence of behavior
- Percent of time (50% of total time)

## Example Priority Learning Target

Matthew will play cooperatively with peers by playing alongside them, sharing materials, or working together on the same task during free choice activities for **5 minutes each day** for 5 consecutive days.

## Collect Data

In this example, you have specified the type of center Matthew is participating in on the data collection form below. This information may be important when analyzing the data later. You have completed the data collection form as follows:

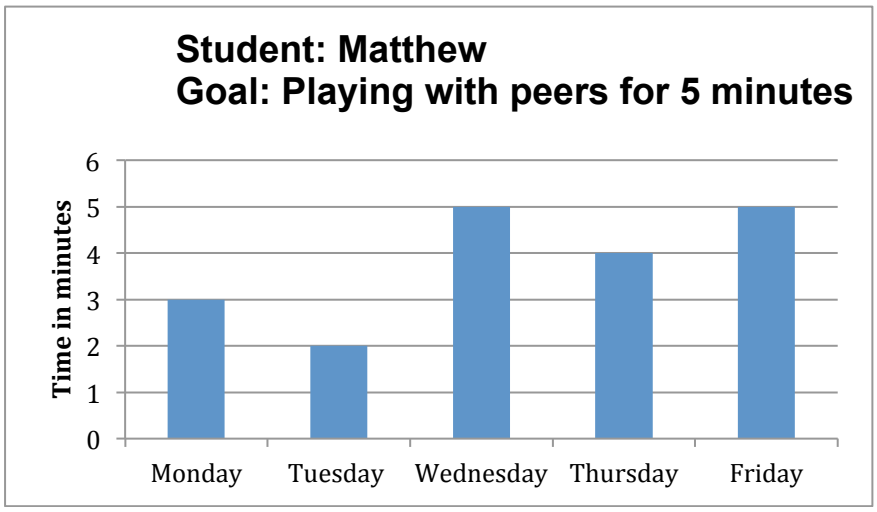
Dash = Desired behavior did not occur in this minute; Matthew played alone
Circle = Desired behavior did occur in this minute; Matthew played with peers
Closed bracket = Child stopped engaging in this activity; Matthew left this center

**Student:** *Matthew* **Activity:** *Centers* **Date:** *Wednesday*

| Center | Time (in minutes) | | | | | Notes |
|---|---|---|---|---|---|---|
| *Blocks* | ~~1~~ | ~~2~~ | ~~3~~ | ~~4~~ | ~~5~~ | *Playing far from other child* |
| *Blocks (cont.)* | ~~1~~ | ~~2~~ | (3) | (4) | (5) | *Other child joins, build together* |
| *Blocks (cont.)* | (1) | (2) | ~~3~~ | ~~4~~ | 5 ] | *Moves away* |
| *Legos* | ~~1~~ | ~~2~~ | ~~3~~ | ~~4~~ | ~~5~~ ] | *Moves away* |
| | 1 | 2 | 3 | 4 | 5 | |

This data collection form shows data for one day; however, you will collect data each day of the week.

## Display Data




## Interpret Child Performance Data (*Is it Working?)*

In the graph above, you compiled data from the whole week.

First, you look at whether Matthew has reached his goal of 5 minutes at any point this week. The graph shows that he reached his goal on Wednesday and Friday. Matthew has accomplished the first part of his criteria, which was cooperatively playing with peers for 5 minutes. However, the second part of the criteria is that he reaches his goal for 5 consecutive days. He has only reached his goal twice and these two days did not occur in a row.

## Interpret Data on Your Implementation (*Am I Doing it?)*

You think about whether something different occurred on those two days that may have helped to increase Matthew's performance.

Did you deliver more learning trials on these days compared to other days? No
Did you deliver more *correct* learning trials on these days? No
Did you spend more time with Matthew and the peer? No
Was the activity more rewarding for Matthew? Yes

You remember that Matthew and the peer were setting up blocks together, which is one of his favorite activities. Because the activity was a rewarding experience for Matthew, he played cooperatively with a peer for longer than usual.

## Make a Decision (*Do I Need to Make Changes?*)

You decide that to increase the desired performance, you should pair Matthew with other children during activities and with materials that he prefers.

# Latency Data

Latency data reflect how long it takes a child to initiate or demonstrate the target behavior (i.e., response onset) once an antecedent has occurred (i.e., prompt or stimulus is presented).

## Example Priority Learning Target

When an adult gives a group or individual directive/request (e.g., "Put your toys away," "Time to clean up," "Please, put on your coat"), Kiera will respond with verbal or motor action **within 1 minute of the direction/request** at least 4 times a day for 5 consecutive days.

## Collect Data

For this behavior, you may collect two types of data. First, you may count the number of times the Kiera does the behavior (e.g., begins to pick up a toy) within 1 minute of direction/request (antecedent). A table showing this data collection option is presented below.

Data Collection Form

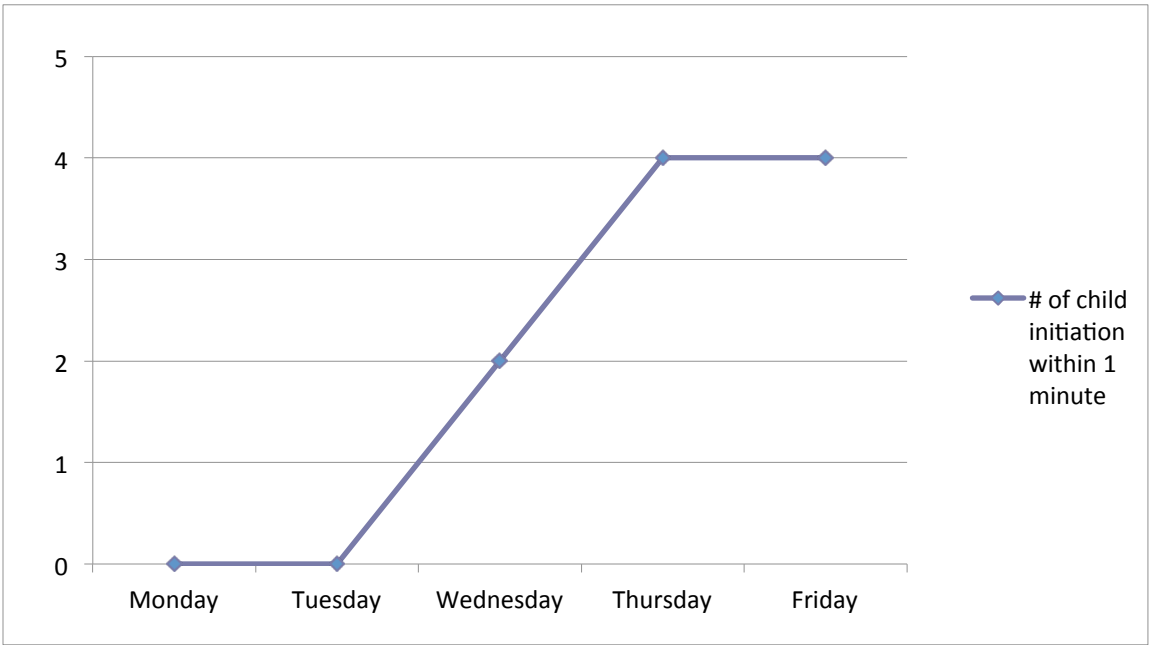
Target Behavior: *When an adult gives a group or individual directive/request (e.g., "Put your toys away," "Time to clean up," "Please, put on your coat"), [child] will respond with verbal or motor action* ***within 1 minute of the direction/request***.

Criterion: *at least* ***four times a day*** *for 5 consecutive days.*

| Days of the Week | # of opportunities presented and **time** between a teacher direction and initiation of the behavior (**in seconds**) | | | | | | Summary Total # of responses w/in 1 minute |
|---|---|---|---|---|---|---|---|
| Monday | 1<br>*87* | 2<br>*96* | 3<br>*82* | 4<br>*81* | 5<br>*79* | 6<br>*90* | *0* |
| Tuesday | 1<br>*65* | 2<br>*75* | 3<br>*73* | 4<br>*75* | 5<br>*78* | 6<br>*71* | *0* |
| Wednesday | 1<br>*61* | 2<br>*58* | 3<br>*66* | 4<br>*59* | 5<br>*69* | 6<br>*70* | *2* |
| Thursday | 1<br>*55* | 2<br>*58* | 3<br>*58* | 4<br>*66* | 5<br>*64* | 6<br>*60* | *4* |
| Friday | 1<br>*72* | 2<br>*66* | 3<br>*60* | 4<br>*60* | 5<br>*54* | 6<br>*58* | *4* |

Another option for collecting data for Kiera's target behavior is to have a timer and measure the time between a teacher direction/request and initiation of the Kiera's response. A graph depicting the second data collection option is presented below.

## Display Data




## Interpret Child Performance Data (*Is it Working?*)

Data show that although Kiera did not begin to perform the behavior at criterion level in the first 3 days of the week, the she had 4 behavior initiations within 1 minute after task directions were provided on Thursday and Friday. The data show an increasing pattern, which demonstrates that the she is making progress toward mastering the priority learning target.

## Interpret Data on Your Implementation (*Am I Doing it?)*

Data collected on your delivery of learning trials showed that you delivered learning trials correctly 90% of the time. However, you also noticed that for some trials on Monday and Wednesday, you did not wait 1 minute to allow her to begin to perform the behavior.

## Make a Decision (*Do I Need to Make Changes?)*

Child performance data show Kiera is making progress toward acquiring the skill. However, you only have 2 data points at the criterion level in the current week. Therefore, you need to work with Kiera on the same skill in coming week(s), while paying attention to the amount time (1 min) you provide the child to initiate a response after your task direction/request.

# Intensity Data

Intensity data reflect the amount of force with which a behavior occurs.

## Example Priority Learning Target

Travis will transition between preferred and non-preferred classroom activities **without having a tantrum/becoming upset** (i.e., resisting, crying, screaming) for three consecutive days.

## Collect data

To collect data on this target you create a behavior Likert-type scale:
0=*No problems*
1=*whining, resisting*
2=*screaming, crying*
3=*screaming, hitting, other aggression*

| Activity | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| *Arrival* | 0 1 2 (3) | 0 1 2 (3) | 0 1 2 (3) | 0 (1) 2 3 | 0 (1) 2 3 |
| *Transition from circle to snack* | 0 (1) 2 3 | (0) 1 2 3 | 0 1 (2) 3 | (0) 1 2 3 | (0) 1 2 3 |
| *Transition from snack to centers* | 0 1 (2) 3 | 0 1 2 (3) | 0 1 2 (3) | 0 (1) 2 3 | (0) 1 2 3 |
| *Transition from centers to circle* | 0 1 2 (3) | 0 1 2 (3) | 0 1 (2) 3 | 0 1 (2) 3 | 0 (1) 2 3 |
| *Transition from circle to lunch* | (0) 1 2 3 | 0 (1) 2 3 | 0 (1) 2 3 | (0) 1 2 3 | (0) 1 2 3 |
| *Transition from lunch to afternoon circle* | 0 1 2 (3) | 0 1 (2) 3 | 0 1 2 (3) | 0 1 (2) 3 | 0 1 (2) 3 |
| *Departure* | 0 1 (2) 3 | 0 1 (2) 3 | 0 1 2 (3) | 0 (1) 2 3 | (0) 1 2 3 |
| **Average Score:** | **Average** *2* | **Average** *2* | **Average** *2.42* | **Average** *1* | **Average** *.57* |

## Display Data

There are two ways you can choose to display these data.

Figure 1: Average Daily Likert-Type Scale Rating

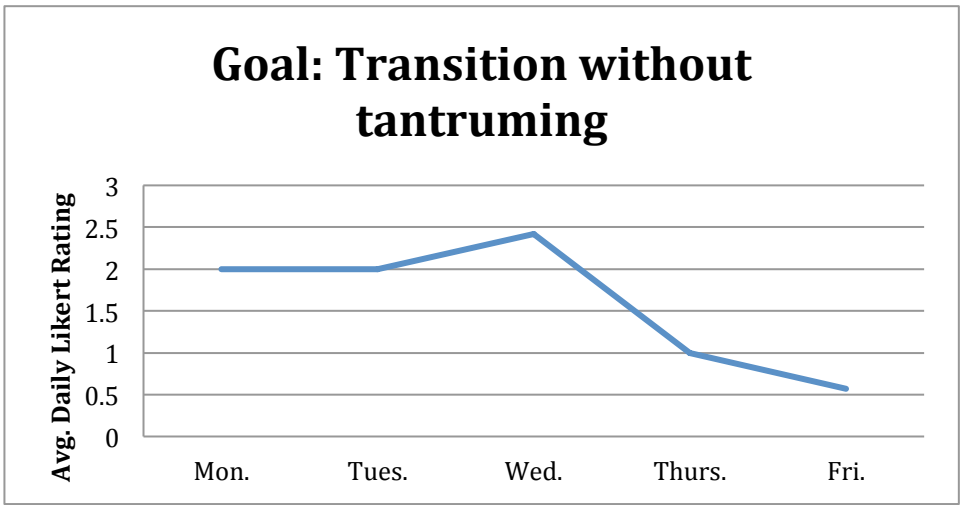
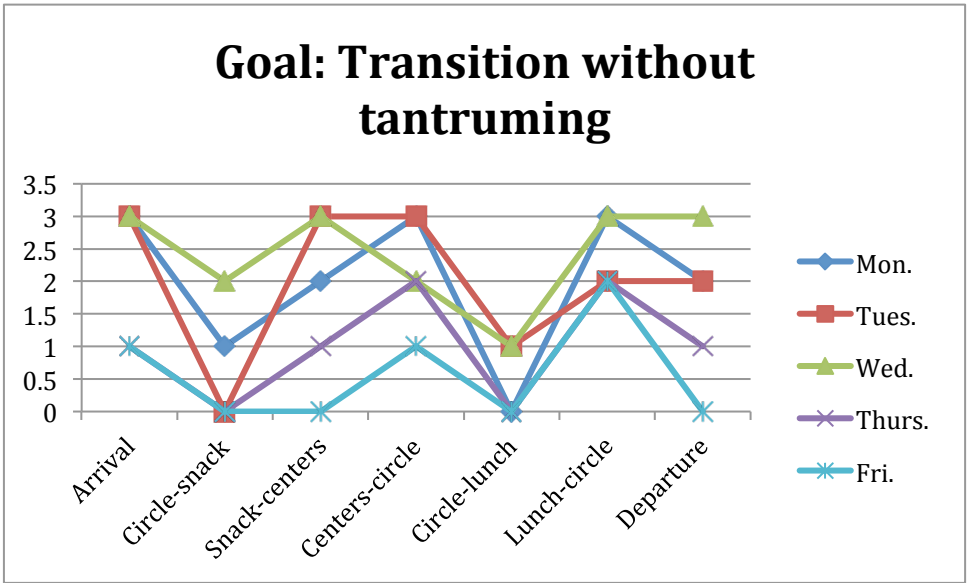



Figure 2: Likert-Type Ratings for Separate Transitions




## Interpret Child Performance data (*Is it Working?*)

You can use Figure 1 to determine the trend of the data. During the course of the week, the intensity of the Travis's tantrum behavior decreased.

You use Figure 2 to look for patterns of behavior; such as whether there are particular times of day that tantrum is more likely to occur. Looking at this graph, you see that the

transition to meals appears easier than when leaving them.  It also looks as though transitions to circle time are especially problematic.

## Interpret Data on Your Implementation (*Am I Doing it?*)

Looking at your plan, you see that you have not planned enough support for trials during transitions from meals and transitions to circle times. Given these times are more problematic for Travis, planning for and providing more support during these trials is necessary to improve his outcomes.

## Make a Decision (*Do I Need to Make Changes?*)

The child is making progress toward the goal, and in order to reach it, you should plan and provide more support during trials for transitions from meals and transitions to circle time.

# Endurance Data

Endurance data show how long, how far, or how many times a child can emit a target behavior before she/he fatigues. Endurance data help address a child's "capacity" to perform a target behavior.

## Example Priority Learning Target

With the assistance of her walker, Shaira will **walk 25 feet** (e.g., in the playground, from one building to another, leaving or walking to the bus) **without stopping to take a break**, four times over the course of two days.

## Collect Data

To collect data on this target you create a distance scale for the data collection form on below.

**Key: Complete the key below by qualifying the behavior.**

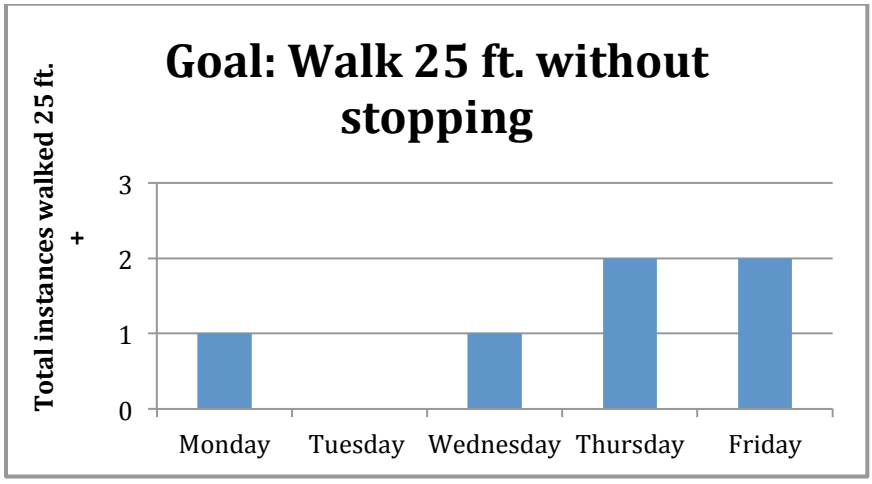
**0=** *0-10 feet*_____ **1=***10-20 feet*_____ **2=***20-24 feet*_____ **3=** *25 feet +*_____

| Time of Day | **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** |
|---|---|---|---|---|---|
| *Leaving bus* | 0 1 (2) 3 | 0 1 (2) 3 | 0 (1) 2 3 | 0 1 2 (3) | 0 1 2 (3) |
| *To lunch* | 0 (1) 2 3 | 0 (1) 2 3 | 0 1 (2) 3 | 0 1 2 (3) | 0 1 (2) 3 |
| *To recess* | 0 1 2 (3) | 0 1 (2) 3 | 0 1 (2) 3 | 0 (1) 2 3 | 0 1 (2) 3 |
| *To class* | 0 (1) 2 3 | 0 (1) 2 3 | 0 (1) 2 3 | 0 (1) 2 3 | 0 1 2 (3) |
| *To bus* | (0) 1 2 3 | (0) 1 2 3 | 0 1 2 (3) | 0 1 (2) 3 | 0 (1) 2 3 |
| **Total 3's circled** | *1* | *0* | *1* | *2* | *2* |

**Key: Complete the key below by qualifying the behavior.**

**0=** *0-10 feet*_____ **1=***10-20 feet*_____ **2=***20-24 feet*_____ **3=** *25 feet +*_____

## Display Data




## Interpret Child Performance Data (*Is it Working*?)

According to the scale, a score of 3 indicates that Shaira has reached her goal of walking 25 feet with the assistance of a walker without stopping. You have totaled how many instances that this has happened each day and graphed it. Looking at the graph, it is clear that the Shaira reached the criterion of walking 25 feet four times across two days. This occurred on Thursday and Friday.

## Interpret Data on Your Implementation (*Am I Doing it?*)

Looking at the data you collected on your implementation, it is clear that you have been delivering all of the complete learning trials that you have planned.

## Make a Decision (*Do I Need to Make Changes?)*

Where do we go from here? Just because the child has achieved this priority learning target does not mean that you no longer need to embed trials! *It is time to go back to the planning stage and create a new priority learning target.* One idea is to use the original priority learning target as the beginning foundation and increase the performance criterion, either by extending how many consecutive days you would like to see the behavior occur or by increasing the distance that you would like the child to walk without stopping.

# Wrap-Up

# Data Collection Tips

These tips are provided to give you ways to think about collecting data. These tips can be used to collect data on your implementation of embedded instruction (*Am I doing it?)* and to monitor your target child's progress (*Is it working?).*

**Pocket Counting:** Transfer pennies or other small objects from one pocket to another each time a target behavior is observed or a complete learning trial is delivered. Count the number of pennies transferred to measure the ***frequency*** of the target behavior or complete learning trials.

**Empty Jar:** Drop pennies or other small objects into a jar each time a target behavior occurs or a complete learning trial is delivered. Count the number of pennies in the jar to measure the ***frequency*** of the target behavior or complete learning trials.

**Masking Tape or Wide Rubber Band on Wrist:** Write the names and target behaviors on masking tape or on rubber bands placed around your wrist. Record slash marks next to the appropriate behavior. Or, make slash marks on the masking tape or band each time a complete learning trial is delivered. At the end of class, count the slash marks for a ***frequency*** count. Or, wear thin rubber bands of different colors for each priority learning target, move the bands from one wrist to the other as the trials are implemented or behaviors are observed.

**Clipboards:** Clipboards can be organized so that there is a separate clipboard for each target behavior, a separate clipboard for each child with priority learning targets, or a clipboard for each center or area in which data is collected. Clipboards can also hold charts for collecting data on teacher implementation of embedded instruction. Pre-made data collection sheets can be on the clipboard or just paper for anecdotal notes. The clipboards can be gathered and data recorded permanently at the end of the day.

**Small spiral notebook:** A small pocketsize notebook can be used to jot down data. During a break or at the end of the day, information can be recorded permanently.

**Apron:** An apron with pockets can be worn during class. Data taken on small notes can be collected on small piece of paper stored in the pockets. These can be permanently recorded at the end of the day.

**Video:** Activities can be video taped to see if a behavior is occurring or to determine when complete learning trials are being delivered.

**Golf or Lap Counters:** A counter can be kept in a pocket or on a belt loop. Pressing each time a behavior occurs or a complete learning trial is delivered records ***frequency.***

**Anecdotal Notes:** Notes can be written to describe with how much and what type of assistance students need to complete tasks as well as number of trials delivered.

# Learning Trial Implementation

# Quality Checklist

Review data to determine if trials were implemented correctly. Check for the features described in the table below.

| Features | Criteria |
|---|---|
| ✓ Did you use complete learning trials? | Each learning trial has an antecedent, a behavior, additional help (if needed), and a consequence or feedback. |
| ✓ Were antecedents specified on the plan available? | All materials needed are available and are placed strategically in the classroom where they will be used. |
| ✓ Were the antecedents appropriate? | Antecedent was effective for securing the child attention; antecedent matched the child's learning stage and fit into the ongoing activity. |
| ✓ Did the behavior specified on the plan occur? | The child performs the behavior as expected; this may include the desired behavior or an approximation of the behavior based on the child's phase of learning. |
| ✓ If additional help (prompt) was provided, were the steps of the procedure followed correctly? Was it helpful? | The additional help (prompt) procedure should help the child perform the targeted behavior Check to see if too much or too little help was provided for the child as part of the antecedent or as part of the additional help. |
| ✓ Were planned consequences delivered? | Consequences should occur immediately after the target behavior. Consequences should be appropriate for the child and fit into the on-going activity. |
| ✓ Was feedback provided? | If the target behavior did not occur after additional help was provided, it is important to provide feedback that tells or shows the child what behavior was expected. |

# References

Dunst, C. J., Herter, S., & Shields, H. (2000). Interest-based natural learning opportunities. *Young Exceptional Children Monograph Series No. 2: Natural Environments and Inclusion,* 37-48.

Dunst, C. J., Bruder, M B., Trivette, C. M., Hamby, D., Raab, M., & McLean, M. (2001). Characteristics and consequences of everyday natural learning opportunities. *Topics in Early Childhood Special Education, 21*, 68-92.

## Recommended Readings:

Bagnato, S. J., Goins, D. D., Pretti-Frontczak, K., & Neisworth, J. T. (2014). Authentic assessment as “best practice” for early childhood intervention: National consumer social validity research. *Topics in Early Childhood Special Education*, 0271121414523652.

Cook, R. J. (2004). Embedding Assessment of Young Children into Routines of Inclusive Settings: A Systematic Planning Approach. *Young Exceptional Children*, *7*(3), 2-11.

Grisham-Brown, J. (2000). Transdisciplinary Activity Assessment for Young Children With multiple Disabilities A Program Planning Approach. *Young Exceptional Children*, *3*(2), 3-10.

Miller, M. (2012). Challenging Behavior and Early Academic Skill Development: An Integrated Approach to Assessment and Intervention. *Young Exceptional Children*, *15*(4), 3-10.

Otrosky, M. & Horn, E. (2002). *Young exceptional children monograph No. 04: Assessment: Gathering meaningful information [Monograph].* New York, NY: Sage.

## Recommended Website:

National Center for Quality Teaching and Learning—15 minute In-service Suites http://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/practice/iss-library.html

# Appendix

The following pages contain sample data collection forms that can be copied or adapted for your use. While the form may be labeled according to the type of data that are collected, that does not mean it is limited to that type. Make the forms your own depending on what fits your needs!

# Frequency Data

**Name: _____** **Date_____**

**What I am looking for:** _____

| Activity | Count | Total | Comments |
|---|---|---|---|
| | | | |
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Adapted from University of Washington. Center of Human Development and Disability. Experimental Education Unit. (2006). *Show me the DATA!* Seattle, WA: Author.

# **Accuracy** – Measuring level of assistance in one activity with multiple steps

**Name:** _____

| Learning Target: |
|---|
| Criteria: |

**Date:**

| **Trial** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Break LT down into smaller steps | | | | | |
| Assistance | I | I | I | I | I |
| | G/V | G/V | G/V | G/V | G/V |
| | PP | PP | PP | PP | PP |
| | FP | FP | FP | FP | FP |
| | R | R | R | R | R |

**Date:**

| **Trial** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Break LT down into smaller steps | | | | | |
| Assistance | I | I | I | I | I |
| | G/V | G/V | G/V | G/V | G/V |
| | PP | PP | PP | PP | PP |
| | FP | FP | FP | FP | FP |
| | R | R | R | R | R |

**Date:**

| **Trial** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|
| Break LT down into smaller steps | | | | | |
| Assistance | I | I | I | I | I |
| | G/V | G/V | G/V | G/V | G/V |
| | PP | PP | PP | PP | PP |
| | FP | FP | FP | FP | FP |
| | R | R | R | R | R |

**KEY:** I- Independent
G/V- Gestural/Verbal Prompt
PP-Partial Physical Prompt
FP-Full Physical Prompt
R-Resistance/Refusal

For the trials: Break the learning target down into the multiple steps. For example:
Trial 1: Get coat off the hook
Trial 2: Put on coat
Trial 3: Fasten fasteners (snaps, buttons, zipper

## **Accuracy –** Measuring Level of Assistance across Multiple Activities

**Name:** _____ **Date:**

| Learning Target: |
|---|
| Criteria: |

| Date | Activity | Prompts | | Date | Activity | Prompts | | Date | Activity | Prompts |
|---|---|---|---|---|---|---|---|---|---|---|
| | | I G/V PP FP R | | | | I G/V PP FP R | | | | I G/V PP FP R |
| | | I G/V PP FP R | | | | I G/V PP FP R | | | | I G/V PP FP R |
| | | I G/V PP FP R | | | | I G/V PP FP R | | | | I G/V PP FP R |
| | | I G/V PP FP R | | | | I G/V PP FP R | | | | I G/V PP FP R |
| | | I G/V PP FP R | | | | I G/V PP FP R | | | | I G/V PP FP R |
| | | I G/V PP FP R | | | | I G/V PP FP R | | | | I G/V PP FP R |
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| | | I G/V PP FP R | | | | I G/V PP FP R | | | | I G/V PP FP R |
| | | I G/V PP FP R | | | | I G/V PP FP R | | | | I G/V PP FP R |

Key: **I** = Independent **G/V** = Gestural/ Verbal **PP** = Partial Physical Assistance **FP** = Full Partial Assistance **R** = Refusal

**Developed at the Experimental Education Unit**
**University of Washington**

# Duration Data Collection Form

Name: _____ Date:_____

Learning Target:_____

| **Activity** | **Time (in second or minutes)** | **Notes** |
|---|---|---|
| | 1 2 3 4 5 6 7 8 9 10 | |
| | 1 2 3 4 5 6 7 8 9 10 | |
| | 1 2 3 4 5 6 7 8 9 10 | |
| | 1 2 3 4 5 6 7 8 9 10 | |
| | 1 2 3 4 5 6 7 8 9 10 | |
| | 1 2 3 4 5 6 7 8 9 10 | |
| | 1 2 3 4 5 6 7 8 9 10 | |
| | 1 2 3 4 5 6 7 8 9 10 | |

# Latency Data Collection Form

Child:
Week of:
Target Behavior:

Criterion:

| Days of the Week | # of opportunities presented<br>Time between a teacher direction and initiation of the behavior (in seconds) | | | | | | | | **Summary**<br>Total # of correct responses |
|---|---|---|---|---|---|---|---|---|---|
| **Monday** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | |
| **Tuesday** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | |
| **Wednesday** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | |
| **Thursday** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | |
| **Friday** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | |

Developed at the Experimental Education Unit

University of Washington

# Behavior Likert Scale for Intensity or Endurance Behaviors

Name: _____ Date:_____

Priority Learning Target:_____

| Activity/ Time of Day | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 | 0 1 2 3 |
| **Average Score:** | **Average ____** | **Average ____** | **Average ____** | **Average ____** | **Average ____** |

**Key: Complete the key below by qualifying the behavior. 0 would be no occurrence going to 3 being the most severe.**

**0= _____ 1=_____ 2=_____ 3= _____**

# Event Recording

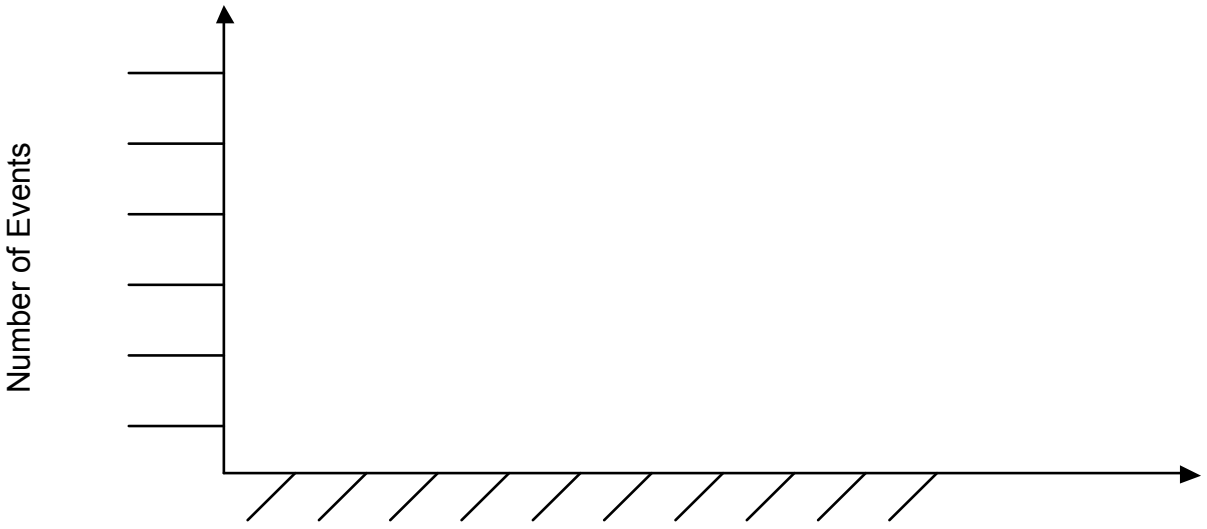
Form 1: Frequency over time

Student: _____ Observer: _____

Behavior: _____

_____

| | Date | Time Start | Time Stop | Notations of Occurrences | Totals |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| Weekly total | | | | | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| Weekly total | | | | | |



# Interval Recording

**Name**_____ **Date** _____

____ Interval

Activity _____

Observer _____

Condition_____

| Interval | Behavior _____ | Engaged (+/-) | Prompt (+/-) | Interval | Behavior _____ | Engaged (+/-) | Prompt (+/-) |
|---|---|---|---|---|---|---|---|
| 1 | | | | 36 | | | |
| 2 | | | | 37 | | | |
| 3 | | | | 38 | | | |
| 4 | | | | 39 | | | |
| 5 | | | | 40 | | | |
| 6 | | | | 41 | | | |
| 7 | | | | 42 | | | |
| 8 | | | | 43 | | | |
| 9 | | | | 44 | | | |
| 10 | | | | 45 | | | |
| 11 | | | | 46 | | | |
| 12 | | | | 47 | | | |
| 13 | | | | 48 | | | |
| 14 | | | | 49 | | | |
| 15 | | | | 50 | | | |
| 16 | | | | 51 | | | |
| 17 | | | | 52 | | | |
| 18 | | | | 53 | | | |
| 19 | | | | 54 | | | |
| 20 | | | | 55 | | | |
| 21 | | | | 56 | | | |
| 22 | | | | 57 | | | |
| 23 | | | | 58 | | | |
| 24 | | | | 59 | | | |
| 25 | | | | 60 | | | |
| 26 | | | | 61 | | | |
| 27 | | | | 62 | | | |
| 28 | | | | 63 | | | |
| 29 | | | | 64 | | | |
| 30 | | | | 65 | | | |
| 31 | | | | 66 | | | |
| 32 | | | | 67 | | | |
| 33 | | | | 68 | | | |
| 34 | | | | 69 | | | |
| 35 | | | | 70 | | | |

Developed at the Experimental Education Unit
University of Washington

# Weekly Record of Behavior Occurrence

Child:

| Learning Target: |
|---|
| Criteria: |

| | 6am | 7 | 8 | 9 | 10 | 11 | 12pm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | night |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mon | | | | | | | | | | | | | | | | | |
| Tues | | | | | | | | | | | | | | | | | |
| Wed | | | | | | | | | | | | | | | | | |
| Thurs | | | | | | | | | | | | | | | | | |
| Fri | | | | | | | | | | | | | | | | | |
| Sat | | | | | | | | | | | | | | | | | |
| Sun | | | | | | | | | | | | | | | | | |

**Key** **Student Initiated:**_____ **Teacher Assisted:**_____ **Other behavior:**_____