

Quality Instruction Through Complete Learning Trials

Blending Intentional Teaching With Embedded Instruction

Erin E. Barton, Ph.D.,
Vanderbilt University

Crystal Crowe Bishop, Ph.D.,

Patricia Snyder, Ph.D.,
University of Florida

Rochelle is a preschool teacher in an inclusive classroom at Bright Horizons Learning Center. She has fourteen 3- and 4-year-olds enrolled in her classroom. Rochelle prides herself on being an intentional teacher. Most of the children in her classroom are making progress toward acquiring knowledge and skills reflected in the state's preschool learning standards; however, she noticed children who seemed to be having difficulty playing cooperatively with one another. Rochelle has introduced some stories and discussion in large group about how to play with friends in the classroom, but Ally and Taegan still seem to be having challenges taking turns and sharing with friends. Likewise, Dylan plays mostly by himself and avoids playing with peers. In addition, Michael does not seem to be making much progress toward his IEP goals, which include interacting with peers, recognizing his letters, and building his expressive vocabulary. Michael usually ends up playing by himself during playtime, and Rochelle is having a hard time encouraging him to initiate play interactions with friends. Rochelle recently attended a workshop about embedded instruction and realized this is an approach she can blend with intentional teaching.

Current recommended practices endorse the full inclusion of children with disabilities with their typically developing peers with the appropriate supports to promote their learning and development (Division for Early Childhood [DEC], 2014; DEC/National Association for the Education of Young Children [NAEYC], 2009). Within inclusive classrooms, there often

is a blending of teaching approaches to address the needs of all young children. Practitioners in inclusive classrooms must identify not only what to teach but how to teach to ensure that all children have access to and participate in the general preschool curriculum while meeting individualized learning needs. Grisham-Brown, Pretti-Frontczak, Hawkins, and Winchell (2009) define *blending* as an approach in which the curriculum is purposefully blended across ability levels and learning opportunities to set the stage for teaching all children in inclusive classrooms. For the purpose of this manuscript, we define *inclusion* using the DEC/NAEYC (2009) joint position statement on inclusion, which emphasizes that the defining features of quality, inclusive programs involve access, participation, and supports. This position statement specifies that inclusion involves children's access to a wide range of learning opportunities, activities, settings, and environments and incorporates the use of individualized accommodations, supports, and teaching to ensure their full participation in play and learning activities with peers and adults.

One teaching approach, intentional teaching, has been described as an integral component of developmentally appropriate practice ([DAP]; Copple & Bredekamp, 2009). Intentional teaching is an approach asserting that effective teachers recognize and respond to all opportunities to engage in and extend children's learning while also purposefully organizing the learning environment to create learning opportunities for children (Epstein, 2007, 2014). Thus, intentional teachers capitalize on children's motivation and engagement and use both child-initiated and teacher-initiated opportunities for learning (Epstein, 2007, 2014).

Another teaching approach, embedded instruction, is characterized as an approach to providing planned and systematic instruction during contextually relevant, ongoing activities and routines to support child engagement and learning (Snyder, Hemmeter, McLean, Sandall, & McLaughlin, 2013). Embedded instruction is a recommended practice in early intervention/early childhood special education ([EI/ECSE]; DEC, 2014; Wolery, 2005) in which teachers plan for and embed a *sufficient number* of instructional trials across the day for those children who need additional and often individualized instructional support. Instructional trials are referred to as complete learning trials (CLTs). This terminology emphasizes the importance of considering the teaching prompt or cue *and* the feedback or consequence provided to the child when providing instructional trials. Embedded instruction has been established to be effective for teaching a variety of skills in inclusive preschool classrooms. For example, embedded instruction has been used to teach social skills (Venn et al., 1993), academic skills (Daugherty, Grisham-Brown, & Hemmeter, 2001; Horn, Lieber, Li, Sandall, & Schwartz, 2000), and lan-

is a blending of teaching approaches to address the needs of all young children. Practitioners in inclusive classrooms must identify not only what to teach but how to teach to ensure that all children have access to and participate in the general preschool curriculum while meeting individualized learning needs. Grisham-Brown, Pretti-Frontczak, Hawkins, and Winchell (2009) define *blending* as an approach in which the curriculum is purposefully blended across ability levels and learning opportunities to set the stage for teaching all children in inclusive classrooms. For the purpose of this manuscript, we define *inclusion* using the DEC/NAEYC (2009) joint position statement on inclusion, which emphasizes that the defining features of quality, inclusive programs involve access, participation, and supports. This position statement specifies that inclusion involves children's access to a wide range of learning opportunities, activities, settings, and environments and incorporates the use of individualized accommodations, supports, and teaching to ensure their full participation in play and learning activities with peers and adults.

One teaching approach, intentional teaching, has been described as an integral component of developmentally appropriate practice ([DAP]; Copple & Bredekamp, 2009). Intentional teaching is an approach asserting that effective teachers recognize and respond to all opportunities to engage in and extend children's learning while also purposefully organizing the learning environment to create learning opportunities for children (Epstein, 2007, 2014). Thus, intentional teachers capitalize on children's motivation and engagement and use both child-initiated and teacher-initiated opportunities for learning (Epstein, 2007, 2014).

Another teaching approach, embedded instruction, is characterized as an approach to providing planned and systematic instruction during contextually relevant, ongoing activities and routines to support child engagement and learning (Snyder, Hemmeter, McLean, Sandall, & McLaughlin, 2013). Embedded instruction is a recommended practice in early intervention/early childhood special education ([EI/ECSE]; DEC, 2014; Wolery, 2005) in which teachers plan for and embed a *sufficient number* of instructional trials across the day for those children who need additional and often individualized instructional support. Instructional trials are referred to as complete learning trials (CLTs). This terminology emphasizes the importance of considering the teaching prompt or cue *and* the feedback or consequence provided to the child when providing instructional trials. Embedded instruction has been established to be effective for teaching a variety of skills in inclusive preschool classrooms. For example, embedded instruction has been used to teach social skills (Venn et al., 1993), academic skills (Daugherty, Grisham-Brown, & Hemmeter, 2001; Horn, Lieber, Li, Sandall, & Schwartz, 2000), and lan-

guage skills (Grisham-Brown, Schuster, Hemmeter, & Collins, 2000) to young children in inclusive preschool classrooms.

Blending intentional teaching with embedded instruction leads to quality instruction for all young children in inclusive preschool classrooms. Blending these two approaches includes setting the occasion for children's learning (i.e., organizing the learning environment to provide learning opportunities) and ensuring sufficient opportunities to respond (i.e., CLT). The purposes of this article are to describe how to blend intentional teaching and embedded instruction approaches and to provide guidance for practitioners to plan for, implement, and evaluate CLTs during contextually relevant activities, routines, and transitions.

*Blending intentional teaching
with embedded instruction
leads to quality instruction for
all young children in inclusive
preschool classrooms.*

Embedded Instruction

Four considerations are relevant for implementing embedded instruction (Snyder et al., 2013; Wolery, n.d.):

1. *What to teach* refers to the content of instruction. This involves the development of instructional learning targets that are (a) aligned with the general preschool curriculum; (b) functional, which means they are related to skills children will need to participate in naturally occurring daily activities and routines; (c) generative, which refers to skills that can be used across settings, materials, and people; (d) and measurable, which means the learning target is defined in such a way that the teacher can monitor the child's progress and make data-based decisions about instruction.
2. *When to teach* refers to the processes teachers use to identify relevant instructional contexts in which they can embed learning opportunities targeting a child's or group of children's individualized learning targets. Activity matrices often are used to specify when teaching will occur (see Figure 1).
3. *How to teach* refers to the processes teachers use to identify instructional procedures to align with the learning target skill, the child's phase of learning, and the child's learning history. Phases of learning include acquisition (learning how to do a skill), fluency (learning to do the skill smoothly and at natural rates), maintenance (doing the skill after instruction has ended), and generaliza-

tion (using the skill across different activities, people, materials, or contexts [Wolery, 2005]).

4. *How to evaluate* refers to the processes by which teachers collect data to determine (a) whether they are implementing embedded instruction practices as planned, (b) whether the child is making progress toward the learning target skill, and (c) whether changes to the implementation of embedded instruction practices are needed. Ongoing progress monitoring is a critical part of embedded instruction.

Figure 1
Example of a Classroom Activity Matrix

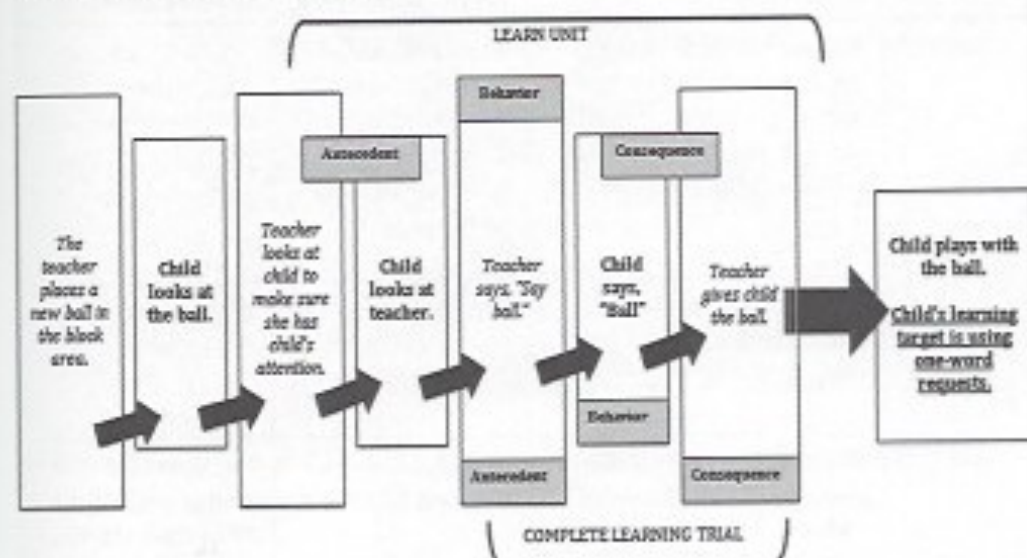
	Michael	Taegan	Ally	Dylan
Arrival	Name-1 trial			
Morning meeting	Name-1			
Centers	Request-8			Play 1 min-8
Lunch	Name-1			
	Request-4			
Small group	Request-3	Turns-4	Turns-4	
Snack	Name-1			
	Request-3			
Circle	Name-1	Turns-1	Turns-1	
Departure	Name-1			

Note. This activity matrix shows how many learning trials are planned to address each of the learning targets for the four children in Rochelle's classroom across all the activities in the daily schedule. Adapted from *Tools for Teachers: Planning Module*, by S. Sandall, P. Snyder, M. McLean, M. L. Hemmeter, T. McLaughlin, L. Edelman, and Embedded Instruction for Early Learning Project, 2009, Gainesville: University of Florida. Copyright 2009 by Embedded Instruction for Early Learning Project. Adapted with permission.

Complete Learning Trials

In embedded instruction, the term *complete learning trial* is used for a three-term contingency that includes a naturally occurring or planned antecedent (A) that sets the occasion for a child behavior (B) and is followed by a naturally occurring or planned feedback or consequence (C) (VanDerHeyden, Snyder, Smith, Sevin, & Longwell, 2005). In addition to the three-term contingency for the child, there are also three-term contingencies for the teacher. The series of interlocking adult and child

Figure 2
Illustration of Learn Unit and Complete Learning Trial as Interlocking Three-Term Contingencies



three-term contingencies has been described as a *learn unit* (Albers & Greer, 1991; Greer, 2002; Greer & McDonough, 1999; Vargus & Vargus, 1991). Figure 2 illustrates the relationship between a learn unit and a CLT.

A CLT is defined specifically as the child's three-term contingency. The learn unit includes the interlocking child and adult three-term contingencies. Learn units can be described in terms of teacher and child responses: The child's attention/engagement (e.g., in Figure 2 the child reaches for the ball) elicits a prompt from the teacher to the child (e.g., the teacher says, "Say ball") which elicits a response from the child (the child says "ball"), which in turn elicits feedback from the teacher (the teacher gives the child the ball). Greer and colleagues found a positive relation between teachers' rates of accurately implemented learn units and student outcomes (Greer & McDonough, 1999).

An intentional teacher using embedded instruction organizes the learning environment and uses systematic prompting and feedback (within these learn units) so CLTs will emerge for the child. For example referring back to the opening vignette, Rochelle might notice Michael playing near Dylan at the water table and say, "Michael, Dylan wants a turn with the blue bucket." If Michael looks at Dylan and gives him the bucket, she might say, "You gave Dylan a turn! That's being a good friend." Thus, Rochelle waited for Michael to attend, provided a prompt, and gave immediate feedback about his behavior. CLTs follow this structure, emphasize children's learning target behaviors, and are provided in contextually relevant situations (see Table 1).

Table 1
Examples of Complete Learning Trials (CLTs)

	Antecedent	Child Behavior	Consequence
Planned	When child is looking at the teacher, the teacher uses a gesture to prompt child to look at the child's visual schedule.	The child walks over to visual schedule and removes the next activity card, which is water play.	The teacher says, "Yes, Carly, it's time for water play!"
	The teacher hands the child a puzzle piece and says, "It's your turn!"	The child puts the puzzle piece in the puzzle.	The teacher smiles and says, "It fits! That is where it goes!"
	The teacher says to the small group of children, "What sounds do you hear in bus?" while pointing to the letters B-U-S and a picture of a bus.	The children respond "/b/!"	The teacher smiles and says, "Yep! Bus starts with the /b/ sound."
Naturally Occurring	The teacher rings the bell, which signals the transition to cleanup time.	Children start cleaning up toys.	Once toys are cleaned up, the children can wash hands for snack.
	The teacher pours all children a little bit of juice and puts the jug of juice on the counter next to the table.	A child drinks his juice, points to the juice, and asks for more.	The teacher immediately pours the child a little more juice.
	The teacher picks a child's name out of the name box to be song helper during circle time.	The child recognizes her name and comes to the front of circle and picks a song.	The teacher and children start singing the song she selected.
Mixed	(Planned) At the end of circle, the teacher says, "All children wearing red today can line up to go outside." She looks at Devonte and says, "You have bright red shoes on today!"	Devonte stands up.	(Naturally occurring) Devonte leaves circle time and lines up with peers near the door to go outside.

Table 1 (continued)

	Antecedent	Child Behavior	Consequence
Mixed	(Naturally occurring) The teacher sits next to the child in the block area and starts stacking blocks with the child.	The child continues stacking blocks and says, "It's tall!"	The teacher says, "Yes! Your building is SO tall, Molly!"
	(Naturally occurring) The teacher puts out just two scissors at the art table for all six children to use.	Jose turns to June and says, "Scissors please?"	The teacher physically helps June give Jose the scissors and says, "Wow! You all are sharing so well!"

Planning for CLTs: Considering Antecedents and Consequences

CLTs are effective when teachers intentionally plan the antecedent (e.g., teaching prompts) and consequence (e.g., feedback) in relation to an individual child's or group of children's learning targets, learning phase, and the instructional context. In blending intentional teaching and embedded instruction, teachers support child initiation and exploration *and* intentionally and systematically implement sufficient numbers of CLTs focused on identified learning targets. This does not mean teachers simply take advantage of "teachable moments." A teachable moment implies the onus is on the child to create a learning opportunity or suggests the teacher waits for these opportunities to occur. Although capitalizing on teachable moments is important and intentional teachers recognize and use child-initiated opportunities to expand a child's learning and development throughout the day, young children with disabilities might not engage with the environment in appropriate and meaningful ways to create a sufficient number of teachable moments to ensure learning (Carta, Schwartz, Atwater, & McConnell, 1991). Thus, effective teachers in inclusive classrooms use blended instruction to systematically and intentionally design the environment and plan what, when, and how to embed CLTs to ensure each child receives multiple, meaningful instructional opportunities. The onus is on the teacher to ensure each child is engaged, participating, learning new skills, and practicing mastered skills.

Environmental arrangements/modifications

For some learning targets and some children, the teacher can intentionally arrange the physical or social environment to set the occasion for CLTs.

Environmental arrangements set the occasion for child-guided learning through children's engagement and participation in everyday activities and routines (see Table 2). That is, intentional teachers arrange the environment to support child-guided learning when, for example, children

Thus, effective teachers in inclusive classrooms use blended instruction to systematically and intentionally design the environment and plan what, when, and how to embed CLTs to ensure each child receives multiple, meaningful instructional opportunities.

are motivated to explore new materials, ask their peers for help or watch their peers model new behaviors, or focus on solving problems on their own (Epstein, 2007, 2014). Examples might include using materials related to a child's specific interests, arranging the physical environment so a child who uses a walker can stand next to peers at the same level at the water table, and adapting art materials for a child with low muscle tone to ensure he or she can grasp and use them independently with peers. The environment also can be arranged to

occasion child initiations. For example, an environmental arrangement for Michael might include putting preferred toys in the water table to encourage his play near peers or adding extra paintbrushes to the easel when he is painting to encourage peers to paint near him.

Instructional Procedures

In inclusive classrooms, teachers who are blending intentional teaching and embedded instruction approaches will have to use more adult-guided instruction when children are unlikely to initiate, learn a skill, or have an experience on their own. Teachers might use three types of instructional procedures to initiate child learning. Teachers select different types of instructional procedures to use depending on the child's learning history and the specific learning target.

Antecedent-focused procedures. Antecedent-focused procedures or prompts (e.g., modeling a new skill, showing a child what to do, using a visual) focus on the "A" of the CLT and involve changing the prompts or enhancing the way the teacher delivers the prompts to ensure the child acquires and maintains a skill related to the learning target behavior. The goal should always be to decrease (i.e., fade) the use of the adult's added prompt to use what naturally prompts the learning target behavior. Thus, prompts need to be intentionally designed and systematically decreased over time.

Table 2
Type and Examples of Environmental Arrangements/Modifications

Type	Description	Example(s)
Environmental modifications		
Physical	Change the physical environment to promote independence.	Using a step stool at the sink so all children can reach the faucet.
Temporal	Change the schedule order, routines, or time for activities to accommodate all children.	Shortening circle time to ensure all children can participate in the entire routine.
Materials	Modify the instructional materials or media so all children can use.	Use larger-print books with tactile features for children with visual impairments.
Task/requirements	Alter the requirements of a task or activity to ensure the child's success.	Give the child paper with her name already outlined so she can trace or copy.
Special equipment	Provide specialized equipment to ensure the child's participation and independence.	Give the child with low muscle tone a chair with a back during circle time so he can observe and participate.
Environmental arrangements		
Choices	Plan for natural opportunities to provide the child with a meaningful choice during ongoing activities and routines. Adapt choices based on the child's skills and preferences.	Do you want the spoon or the fork to eat? Dolls or puzzles?
Preferred, novel/interesting materials	Use novel or preferred materials and rotate materials to promote interest and engagement.	1. Put new cups, bowls, and spoons in the sand table. 2. Rotate the blocks (use plastic, wooden, colored, and different sizes). 3. Dye the modeling clay purple (the child's favorite color).
In view/out of reach	Place preferred or necessary items in view but out of reach and wait for the children to ask for them or ask for help to get them.	1. Put the paintbrushes near the easel on a high shelf. 2. Place most of the toys for the modeling clay in a clear plastic container that is hard to open.
Inadequate portions	Give the children a small amount at a time and wait for them to ask for more.	1. Give a small amount of paint at the easel. 2. Give a smaller than usual amount of modeling clay.
Unexpected, silly situations	Create situations that are unexpected or violate the child's expectations and wait for them to protest.	1. Start to put the child's boots on your own feet. 2. Place the child's coat in the wrong cubby.

Note. Adapted from Kaiser, Ostrosky, and Alpert (1993); Sandall and Schwartz (2006).

For example, consider the system of least prompts, which starts with the natural prompt and gradually increases the adult prompting and instruction. The teacher initially would use the natural prompt and then use increasingly more guidance until the child demonstrates the learning target behavior. Using this procedure, prompts are decreased (i.e., faded) over time until a natural prompt sets the occasion for the behavior to occur. For example, when teaching Dylan play skills, Rochelle might place the toys on the floor in front of him (natural prompt), then give him a choice of toys (second prompt), then model a play behavior (third prompt), then use hand-over-hand assistance to help him play (Barton & Pavilanis, 2012). If he engages in play at any point during the instructional trial, Rochelle would stop her prompting and provide specific feedback (e.g., "You fed your hungry baby?") to complete the learning trial. In contrast, most-to-least prompting starts with the most directive prompt and gradually decreases the adult prompting and instruction. This means the teacher delivers the most intrusive prompt first, but decreases her guidance over time as the child learns the skill. With both the system of least prompts and most-to-least prompting, the specific types of prompts (e.g., verbal, physical, visual) are chosen based on the child's learning history and the context.

Time delay. Time delay is an additional antecedent-based procedure that can be embedded into typical routines and activities to teach new skills. With time delay, the teacher initially provides the natural prompt but immediately follows with the complete guidance (i.e., the controlling prompt or the most intrusive prompt needed to ensure the target behavior occurs). After delivering several of these CLTs, the teacher starts waiting either a constant or progressively longer amount of time between delivering the natural prompt and complete guidance.

Although the focus of all the aforementioned procedures is on changing the teacher's prompt, the instructional procedures are not effective unless the teacher also provides feedback immediately following the child's behavior. Without feedback, the CLTs are incomplete and might be ineffective regardless of the prompt. Consequence strategies involve systematic manipulation of the portion of the three-term contingency (i.e., the "C") that follows the behavior. This might include using specific positive reinforcement schedules (e.g., reinforcing every third behavior or reinforcing the child every minute for participating in circle), extra help (i.e., systematically delivering different feedback based on the child response), and shaping (i.e., differential reinforcement of successive approximations of the learning target). For example, shaping might be used to teach a Michael to request using one word. If Michael is playing with blocks, Rochelle might hold up a block and say "block." At first, Rochelle might give Michael the

block (consequence) just for looking at her and the block. Over time, she might give him the block as a consequence for pointing to it, then only after he makes the /b/ or /ck/ sound, and finally when he attempts to say "block." The CLT in this example is Rochelle showing the block (i.e., antecedent), Michael looking at the block, making sounds, or saying "block," (i.e., behaviors successively reinforced), and Rochelle giving Michael the block (i.e., consequence). Shaping teaches Michael to say "block" in a meaningful context. Rochelle will intentionally embed multiple, direct CLTs like this during the day to ensure Michael masters the learning target behavior (i.e., uses one-word phrases).

Chaining. Chaining is another type of instructional strategy that might be effective for some children, particularly when the learning target involves sequences of behavior like drinking from a cup or washing hands. Chaining involves a specific sequence of behaviors identified through a task analysis (i.e., breaking a task down into small steps and reinforcing each step). For example, if a child is learning to drink from a cup, we might identify grasping the cup, bringing it to his or her mouth, and drinking as three discrete behaviors in a "drinks from a cup" chain. Each behavior (i.e., grasp the cup, bring to mouth, drink) occurs in sequence immediately after the previous and all are related to each other. A cup on a table (an environmentally arranged "A") might set the occasion for the child to grasp the cup (i.e., first discrete behavior). Grasp of the cup is both a reinforcer for grasping ("C") and the stimulus ("A") for bring to mouth (second discrete response). This sequence continues until the child drinks from the cup. Washing hands, getting dressed, and brushing teeth are additional examples of learning targets that might be taught using chaining.

Naturalistic instructional procedures. Naturalistic instructional procedures including incidental teaching, naturalistic time delay, and milieu teaching can be embedded into a variety of routines and activities to teach a range of skills (Kaiser & Hester, 1994; McGee, Morrier, & Daly, 1999). Incidental teaching can be used to improve young children's communication skills. The teacher sets up the environment to elicit a request from the child, waits for the child to initiate, and then prompts the target response. For example, Rochelle might plan to give Michael choices during snack, circle time, and transitions to build his expressive vocabulary. During snack she gives him just a few crackers, waits for him to point to the crackers, and provides him the choice between, for example, crackers or a juice. If he says "cracker" or "juice" she gives him the item. If he points at one of them, she says the word for the item he pointed at ("Cracker, please") and waits. If he says "cracker" she gives it to him and says, "You want more crackers!" If he points again, she says "Cracker, please!" and gives him the cracker. In

this manner, Rochelle provides a contextually relevant learning opportunity based on a functional learning target with naturally occurring consequence.

Similarly, with naturalistic time delay, the teacher waits a specified amount of time before providing the prompt. For example, Rochelle might plan to use time delay to help Michael learn the letters in his name. She might use placemats with each child's name during snack. When Michael comes to the table looking for his placement she might point to the letter "M" and say, "Michael starts with a ___" and waits a specified amount of time for him to respond. If he says, "M" she gives him the placemat and says, "Yes! Michael starts with a M!" If he does not say anything or says the wrong letter, she says, "M, Michael starts with a M" and gives him the placemat. The naturalistic instructional procedures require waiting for the child to initiate. Teachers might need to use the other antecedent- or consequence-based strategies previously described with children who initiate at low rates or are unlikely to initiate.

Planning, Implementing, and Evaluating Embedded Instruction

Teachers using a blended instructional approach need to intentionally plan for, implement, and evaluate embedded instruction. Intentional teachers arrange the environment to support child-guided learning, provide adult-guided instruction using CLTs, and systematically monitor progress over time. In the sections below, we describe strategies related to planning, implementing, and evaluating embedded instruction.

Creation of the Written Implementation Plan

As part of being an intentional teacher using a blended approach, it is important to create a written plan detailing the implementation of CLTs for each child or group of children. This might include a list of the daily routines and activities and specific plans for which instructional procedures to use and how many CLTs to embed on which learning target behavior within each activity across the day. The written forms should allow the teacher to plan and monitor implementation. Once the plans are created, it is important to review the opportunities for CLTs and ensure they are sufficient to promote child learning. Figure 1 is an example of an activity matrix showing how many trials Rochelle has planned to implement for Michael, Taegan, Ally, and Dylan. Activity matrices can be created to show how many CLTs are planned for multiple children across the entire daily schedule, as shown in Figure 1, or they can be created for specific activities (e.g., centers, circle), areas of the classroom (e.g., sensory table, block area, dramatic play area),

or for an individual child. Activity matrices should be used in conjunction with instructional plans, which provide more detailed information about the what, the how, and the when for an entire learning cycle for the child (e.g., acquisition, fluency, maintenance, and generalization). Figure 3 is an example of a planning form that allows a teacher to focus on one learning target for a child, consider when and how to embed across the day, and includes a section for progress monitoring.

Figure 3

Example of an Instructional Planning Sheet. Adapted From *Tools for Teachers: Planning Module*, by S. Sandall, P. Snyder, M. McLean, M. L. Hemmeter, T. McLaughlin, L. Edelman, and Embedded Instruction for Early Learning Project, 2009, Gainesville: University of Florida. Copyright 2009 by Embedded Instruction for Early Learning Project. Adapted With Permission.

Instructional Planning Sheet		
Child's Name: <u>Michael</u>		
Learning Target: <u>Use at least two words to request objects or food</u>		
Routines/Activities: <u>Centers, Lunch, Snack, Small Groups</u>		
Materials: <u>Preferred toys, food items at snack, critical materials to complete activities in small groups</u>		
Antecedent	Behavior	Consequence
What do you say or do?	What does the child do?	How do you respond?
<i>Place toy/material/food in view but out of reach</i>	<i>Use at least 2 words two request the item (e.g., want ball, need paper, eat cookie)</i>	<i>Provide verbal feedback (you can have the cookie, thank you for asking me)</i>
Ask <i>What do you want?</i>		Give item
What, if any, assistance, do you provide?		If incorrect: Say _____ Model 2-word request
Data collection:		
Activity	CLT Planned	CLT Delivered
Centers	8	1 1 1 1
Lunch	4	1 1
Small Group	3	1
Snack	3	1 1
		Correct Response
		1 1
		1
		1
		1

Rochelle writes a plan to embed CLTs for Ally, Taegan, Dylan, and Michael. With Ally and Taegan, she works on taking turns with peers by embedding CLTs into small- and large-group activities. At centers, she will space CLTs with Dylan to help him engage in play with a toy for at least 1 minute. To help Michael with his expressive vocabulary, Rochelle will distribute CLTs to elicit two-word requests for objects or food at snack time, small group, and centers. She also will work on letter recognition by distributing CLTs for Michael to recognize his printed name at arrival, circle, snack, and departure. Now she can work on implementing her plan.

Implementation of CLTs

The key to blending intentional teaching and embedded instruction is that a sufficient number of CLTs are delivered, as intended, into ongoing activities for those children who need extra learning supports. CLTs can be implemented for an individual child or groups of children during planned and naturally occurring activities. This ensures that children receive the appropriate amount of teaching focused on their learning targets. Implementation can begin once the learning targets for groups and individual children are identified and instruction is planned. The planning should guide the when, how, and number of CLTs to embed. Table 3 provides a summary of the steps for using CLTs.

Delivery of CLTs. CLTs can be massed, spaced, or distributed within meaningful contexts (see Tables 4 and 5 for examples; Wolery, Ault, & Doyle, 1992). Massed CLTs are delivered as consecutive, discrete CLTs within an activity or routine. Spaced CLTs are also delivered within an

Table 3
Steps for Using Complete Learning Trials (CLTs)

1.	Assess each child's present level of development and learning history.
2.	Plan to provide a sufficient number of embedded CLTs for each child.
3.	Plan how to deliver CLTs; they can be massed, spaced, or distributed within meaningful contexts based on the needs of the child, the learning target, and the context, including what skills are needed for access and participation in typical activities and routines.
4.	Consider how the learning target behavior is related to one of these three ultimate outcomes: (1) acquiring and using knowledge and skills, (2) having positive social-emotional skills, and (3) using appropriate behaviors to meet their needs.

an, and
th peers
centers,
th a toy
abulary,
objects
ill work
nize his
she can

action is
to ongo-
upports.
children
res that
on their
g targets
action is
mber of
or using

ed within
, Ault, &
ete CLTs
within an

y.
d.
d within arget, nicipa-
three h having to meet

activity or routine; however, there is a noninstructional pause between CLTs. Distributed CLTs are embedded within or across routines and activities. Massed, spaced, or distributed CLTs are delivered based on the context (i.e., the expectations within the activity), the child's learning target, and the phase of learning. Children might need massed CLTs if they are just learning a skill related to a learning target behavior and distributed CLTs if they are generalizing a skill.

For example, massed instruction includes the presentation of multiple consecutive, discrete CLTs within an activity or routine. These might be appropriate for teaching Michael to request items during snack where there are multiple opportunities for him to request. Rochelle might place a small amount of snack on his plate and wait for him to ask for more, give him more, and repeat multiple times. Spaced CLTs are often appropriate during small-group activities or routines and include delivering CLTs to a child or children with a brief pause with instruction between CLTs. For example, Rochelle might pass Ally a "turn card," comment on her turn (e.g., "You picked two apple cards") and help her pass the turn card to Taegan. Because Ally and Taegan are still learning to take turns, Rochelle might provide a verbal or gestural prompt and specific feedback. Using this strategy, each child has multiple, meaningful opportunities to learn how to take turns or practice taking turns spaced throughout the engaging, developmentally appropriate game. Distributed CLTs are delivered within and across activities. For example, Rochelle might embed multiple CLTs for Michael to identify his name across routines. During arrival, she might put a label with his name on his cubby and say, "Whose cubby is yours, Michael?" When Michael identifies his name, she says, "Yes! That says 'Michael'" and spells out M-i-c-h-a-e-l. During snack, she might use placements with each child's name. She might say, "Whose is this?" and hold up Michael's placemat. She can deliver the same type of consequence used during arrival here. During the transition to cleanup time, she might use carpet squares with name labels. She might say, "Whose is this?" and hold up Michael's carpet square. Again, she can deliver the same consequence. Thus, distributed CLTs for the same learning target can be embedded across activities, routines, and transitions using a sufficient number of CLTs, which promotes both acquisition and generalization.

Intentional teachers arrange the environment to support child-guided learning, provide adult-guided instruction using CLTs, and systematically monitor progress over time.

Table 4
Examples of Embedding Complete Learning Trials (CLTs) for Group Activities

Learning target	Massed CLTs	Spaced CLTs	Distributed CLTs
Children will give peers a turn during a game	The teacher repeats this with Mikayla several times in a row counting to three to five each time. Mikayla receives at least 8–10 massed complete learning trials in a row.	<p>Set up a simple board game with three or four children. Each child takes a turn rolling a large die and moving her or his game piece.</p> <p>A: Teacher says, "It's Mark's turn. Give the die to Mark."</p> <p>B: Josie passes the die to Mark and Mark rolls the die.</p> <p>C: "Nice sharing Josie! What number is Mark going to roll?"</p> <p>The teacher repeats this with each child and adapts the prompts and feedback based on the individual child's needs. The children receive at least 9–10 spaced complete learning trials during the activity.</p>	<p>The teacher will set up opportunities for peers to take turns throughout several activities during the day. She will put just two shovels in the sand table, allow just one child at the computer at a time for 5 minutes, allow just 2 children at the easel at a time, and put just two rollers at the modeling clay table.</p> <p>A: Teacher says, "Mark can have the shovel for 2 more minutes then it's Toma's turn." She sets a visual timer. After two minutes she says, "It's Toma's turn."</p> <p>B: Mark passes the shovel to Toma.</p> <p>C: "Nice sharing Mark! What number is Toma going to make?"</p> <p>The teacher repeats this with each child and adapts the prompts and feedback based on the individual child's needs. Each child receives at least 10 distributed complete learning trials during the day.</p>

least 10 distributed complete learning trials during the day.

Table 4 (continued)

Learning target	Massed CLTs	Spaced CLTs	Distributed CLTs
Children will comment on pictures and events in the book.	Read a story with props and a felt board to just Luke. He places a prop on the felt board that corresponds with the events in the story.	Read a story with props and a felt board to 3–4 students. Each child takes a turn placing a prop on the felt board that corresponds with the events in the story. A: Teacher says, "Brown bear, brown bear what do you see? Who has the brown bear?" and points to Luke. B: Luke holds up the brown bear, places it on the felt board, and says, "brown bear!" C: "Yes, Luke had the brown bear!" The teacher repeats this for each page and each child and adapts the prompts and feedback based on the individual child's needs. The children receive at least 5–6 spaced complete learning trials during the book. If more complete learning trials are needed, the teacher can read the book twice and give children different props the second time.	The teacher will read books to the children at least three different times during the day (e.g., small group time, circle time, and the transition to departure). She will make sure each child has an opportunity to comment at least twice during each book each day. A: Teacher says, "The driver on the bus goes . . . Maci, what does the driver do next?" B: Maci points to the book and says, "Beep, beep, beep!" C: "Yes! The driver on the bus goes Beep beep beep!" The teacher repeats this with each child and adapts the prompts and feedback based on the individual child's needs. Each child receives at least 5–6 distributed complete learning trials during the day.
	A: Teacher says, "Brown bear, brown bear what do you see? Luke, what does the brown bear see?" and points to the red bird.		
	B: Luke holds up the red bird, places it on the felt board, and says, "red bird!"		
	C: "Yes, brown bear saw the red bird!" The teacher repeats this with Luke for each page. Luke receives at least 8–10 massed complete learning trials in a row.		

Table 5
Examples of Embedding Complete Learning Trials (CLTs) for Individual Activities

Learning target	Spaced CLTs	Massed CLTs	Distributed CLTs
Mikayla will count to 5 using toys or other items by pointing to each item and saying the number.	<p>The teacher will sit next to Mikayla and peers in the block area. She will play with the blocks and follow Mikayla's lead in play.</p> <p>A: Teacher says, "That is a long train track! Let's count the blocks, points to the first one says, and says, "One . . ." She waits for Mikayla to imitate and keep counting.</p> <p>B: Mikayla says, "One, two . . ."</p> <p>C: "There are five blocks lined up!"</p> <p>The teacher repeats this with Mikayla after pausing and interacting with a different child. Mikayla receives at least five spaced CLTs during block play.</p>	<p>The teacher will sit next to Mikayla during snack time. She serves small Goldfish for snack and only gives Mikayla four to five at time.</p> <p>A: After Mikayla eats one or two Goldfish, the teacher says, "Let's count how many are left. One . . ."</p> <p>B: Mikayla says, "One, two, three . . ."</p> <p>C: "There are three left! Want two more?" and counts one, two.</p> <p>The teacher repeats this with Mikayla several times in a row, counting to three to five each time. Mikayla receives at least 8-10 massed CLTs in a row.</p>	<p>The teacher plans to embed CLTs for counting into at least four activities for Mikayla. The teacher will prompt counting during snack, block play, water play, and outside on the playground.</p> <p>A: While Mikayla is in the sandbox outside with acorns and sand, the teacher says, "That is a lot of acorns Mikayla! How many do you have? One . . ."</p> <p>B: Mikayla says, "One, two, three . . ."</p> <p>C: "You have four acorns!"</p> <p>The teacher repeats this with Mikayla again on the playground and during other activities.</p> <p>Mikayla receives more than 10 distributed CLTs throughout the day.</p>

Table 5 (continued)

Learning target	Spaced CLTs	Massed CLTs	Distributed CLTs
Louis will take 10 independent steps.	<p>The teacher will set up a ball game with Louis and two peers on the playground. The teacher will throw the ball and the child will try to toss it in the hoop, then go get it and pass to the next child. After Louis takes a turn, she prompts him to walk about five steps to get the ball and five steps back to bring to a peer.</p> <p>A: Teacher says, "Louis's ball made it in the hoop! It's Sammy's turn!"</p> <p>B: Louis walks five steps to the hoop and five steps back!</p> <p>C: The teacher says, "It's Sammy's turn! Nice shot Louis!"</p> <p>The teacher repeats this with each child. Louis receives at least 10 spaced CLTs during the ball game.</p>		<p>The teacher plans to embed CLTs for walking into at least five activities or transitions for Louis. The teacher will prompt walking during the transition at arrival, and snack time, outdoor play, and circle time.</p> <p>A: During circle time, the teacher picks Louis's name out of the bag to pick a song. She says, "Louis come up here and pick a song!"</p> <p>B: Louis walks about five steps to the front of circle, picks a song, and walks about five steps back to his spot when finished.</p> <p>C: "You picked the popcorn song!"</p> <p>The teacher repeats this with Louis again on the playground and during other activities. Louis receives more than 10 distributed CLTs throughout the day.</p>

Individual and group activities. Typical early childhood classrooms include a mix of individual and group activities. Embedded instruction can be implemented in both types of instructional settings (see Tables 4 and 5). For example, CLTs focused on the overall goal of the activity and each child's individual learning targets can be embedded into group activities. With careful planning and systematic instruction, group activities can provide multiple opportunities for spaced or massed CLTs depending on the context. Furthermore, group activities provide opportunities for observational learning (Ledford, Gast, Lusche, & Ayers, 2008). Some children will exhibit a behavior after watching and imitating other children. However, other children might need individualized instruction. In either situation, it is essential to secure the child's attention prior to implementing the CLT. This is particularly important during group activities.

Planned versus naturally occurring CLTs. In high-quality, well-planned classrooms with intentional teachers, there will be opportunities for both naturally occurring and planned CLTs. However, as described previously, even naturally occurring CLTs require intentional planning. When children are first acquiring skills, they might need more planned CLTs embedded into ongoing activities. However, as children become fluent in target skills, teachers can fade prompt-based antecedents and thin the consequences to ensure naturally occurring antecedent and consequences occasion and maintain the behavior.

Planned CLTs might be particularly important for young children with special needs. For example, at the beginning of the year, Rochelle's students might be learning to follow the transition cues. During the transition from snack to circle time, Rochelle says, "It's time to clean up. The red table can line up first." This is the naturally occurring antecedent. Most children at the red table know this means to pick up their plate and cup, place them in the sink, and line up to wash hands. Some children observe other children doing this and imitate them. The naturally occurring consequence might be that Rochelle smiles at them or says, "Pick your seat at circle!" after they finish washing hands. Michael and Dylan might need more support to learn this routine. For example, Rochelle might look at Dylan and point to the sink after saying, "It's the red table's turn to clean up." After he has cleaned up his plate and washed his hands, Rochelle also might say, "Dylan, you are all clean! Go pick a seat on the circle rug!" In this example, the naturally occurring CLTs are effective for some children, and Rochelle can embed individual CLTs into the transition to ensure all children are learning to independently follow the routine.

Evaluation of CLTs

An important component of effective blended instruction is evaluating the implementation of CLTs. Evaluating CLTs involves collecting data to determine whether teachers are implementing CLTs as intended and if a child or group of children is learning skills related to their learning targets. Although practitioners often think about collecting data to monitor child progress, it is equally important to examine whether the CLTs are implemented as planned. For example, Rochelle might collect data on the number of times Michael initiates an interaction with a peer and find that he has not made much improvement over the course of 2 weeks. One reason might be that the teaching procedures are not aligned with his current skill level. It might be that the teaching is appropriate, but the number of CLTs is not sufficient. Or, it could be that both the teaching procedures and the number of CLTs planned are appropriate, but the CLTs are not being implemented appropriately in terms of the prompts used or the consequences provided. Without collecting data on both Michael's progress and the implementation of the CLTs, it will be difficult for Rochelle to make informed decisions.

Collecting data on implementation. There are a number of ways teachers can collect and use data on their implementation of CLTs. Teachers can count the number of CLTs delivered for a learning target and compare it with the instructional plan. This might be useful in conjunction with child data to determine whether the number of CLTs is sufficient. This information also helps the teacher evaluate whether the instructional plan is being implemented as planned. It does not, however, give any information about whether the CLTs delivered were actual CLTs. For example, Rochelle might videotape herself implementing CLTs and then review the video to determine whether the CLTs were complete and which instructional procedures were used (Bishop, Snyder, & Crowe, 2014; Crowe, Snyder, Crow, & Mullin, 2011). This method for collecting data provides information on both the implementation of CLTs and child behaviors and will help Rochelle make decisions about whether she needs to be more intentional in planning or implementing the components of a CLT or whether she might want to try a different instructional procedure.

Collecting child data. In addition to collecting data on implementation of CLTs, it is important to collect data to monitor children's progress toward their learning targets. There are several types of data that can be collected to monitor child progress, including the frequency with which the child demonstrates the target behavior within and across activities, the amount of time it takes a child to complete a task, the percentage

opportunities in which the child demonstrates the target behavior, what level of support is needed, or how fluent the child is in demonstrating the behavior. The type of data to collect and when to collect depends on the child's learning target, the instructional plan, and whether the goal is to assess acquisition, fluency, generalization, or maintenance. For example, if Rochelle determined that Ally is able to take turns with her peers when prompted during circle time, she might assess whether this skill is generalizing across activities and peers. Because Dylan's learning target involves engaging in play for at least 1 minute, Rochelle might want to time how long he engages in play routines with different toys. Child data should be used in conjunction with implementation data to determine whether changes are needed to the number of CLTs implemented, whether additional support is needed or prompting can be faded, and whether the child might be ready for a new target skill (Hojnoski, Gischlar, & Missall, 2009a, 2009b).

Rochelle decides to ask one of her assistants to videotape small-group time so she can monitor her implementation of CLTs for Ally, Taegan, and Michael. When she watches her video, she realizes she did implement CLTs for Ally and Taegan as planned, but she only delivered one learning trial for Michael's learning target when she had planned to deliver three. Although it was a CLT, she is not sure this is sufficient to help him acquire his target skill. She notices that Ally takes her own turn and allows her friend to have a turn after every verbal prompt. Taegan still needs additional prompts to give a peer a turn 50% of the time. Rochelle decides to continue giving verbal prompts to Taegan during small group but wants to start fading verbal prompts for Ally. In her revised instructional plan, Rochelle decides to try using a gestural prompt for Ally to take her turn. She realizes she needs to be more intentional about providing opportunities for Michael to request, so she decides to play a game with highly preferred materials that he can request. She also keeps her implementation plan on hand to tally the number of CLTs she implements during the activity. Rochelle continues to monitor her implementation of CLTs and child progress so she can make informed decisions about how to continue individualizing instruction.

Important Considerations for Using CLTs

There are several important factors teachers should consider when planning to deliver CLTs. First, teachers should make sure they understand each child's present level of development and learning history. This will help with identifying functional, developmentally appropriate learning targets and effective instructional procedures. For example, children

with language delays might respond to visual or gestural prompts more efficiently than verbal prompts. Children with social delays might not respond to social praise at all; tangible items might be more effective. Second, teachers should ensure they are providing a sufficient number of CLTs for each child. This involves careful planning of all aspects of the environment and ongoing progress monitoring. Children need a mix of opportunities to learn new target behaviors and practice target behaviors already learned. If children are spending too much time not engaged or engaged with the same materials, it might indicate that the child needs more challenging activities or more learning opportunities. CLTs should be continually adapted to ensure children are maintaining skills and generalizing them across settings, activities, routines, materials, and people. Third, part of planning should involve determining how to deliver the CLTs. They can be massed, spaced, or distributed within meaningful contexts based on the needs of the child, the learning target, and the context. Finally, teachers should remember the ultimate outcomes from blended instruction focus on preschool children (1) acquiring and using knowledge and skills, including communication and early literacy; (2) having positive social-emotional skills, including social relationships; and (3) using appropriate behavior to meet their needs (Early Childhood Outcomes Center, 2005). As learning targets are identified, teachers should consider how the learning target behavior is related to one of these three functional and ultimate outcomes.

Note

For more information, please contact Erin E. Barton at erin.e.barton@vanderbilt.edu.

References

- Albers, A. E. & Greer, D. (1991). Is the three-term contingency trial a predictor of effective instruction? *Journal of Behavioral Education, 1*, 337-354.
- Barton, E. E. & Pavilanis, R. L. (2012). Teaching pretend play to young children with autism. *Young Exceptional Children, 15*, 5-17.
- Bishop, C., Snyder, P. A., & Crow, R. (2014). *Impact of video self-monitoring on preschool teachers' implementation of complete learning trials*. Manuscript in preparation.
- Carta, J. J., Schwartz, I. S., Atwater, J. B., & McConnell, S. R. (1991). Developmentally appropriate practice: Appraising its usefulness for young children with disabilities. *Topics in Early Childhood Special Education, 11*, 1-20.
- Copple, C. & Bredekamp, S. (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- Crowe, C., Snyder, P., Mullin, M., Crow, R., & Embedded Instruction for Early Learning Project (2009). *Embedded instruction for early learning observation system—Teacher Version (EROS-T)*. [Manual and training videos]. Unpublished instrument, University of Florida, College of Education, Gainesville.
- Daugherty, S., Graham-Brown, J., & Hemmeter, M. L. (2001). The effects of embedded skill instruction on the acquisition of target and nontarget skills in preschoolers with developmental delay. *Topics in Early Childhood Special Education, 21*, 211-219.
- DEC/NAEYC. (2009). *Early childhood inclusion: A joint position statement of the Division for Early Childhood (DEC) and the National Association for the Education of Young Children (NAEYC)*. Chapel Hill: The University of North Carolina, FPG Child Development Institute.
- Division for Early Childhood. (2014). *DEC recommended practices in early intervention/early childhood special education*. Retrieved May 14, 2014 from <http://www.dec-sped.org/recommendedpractices>