



Embedded Learning Opportunities for Children with and Without Disabilities

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Three-year-old Emma attends an inclusive preschool classroom alongside 13 other children—three with disabilities and 10 without. Emma was recently diagnosed with autism spectrum disorder, and while she has many strengths, she is not yet communicating with words.

Emma’s teacher, Marcy, has been working with Emma toward a target skill of using words. Today, Marcy has purposefully placed some blocks on the rug in the block center in front of her where Emma can see them but cannot reach them. Marcy’s goal is that this “in-sight-but-out-of-reach”

strategy may cause Emma to use words to communicate that she wants the blocks.

When Emma begins her play, Marcy soon notices she wants the blocks that are out of reach as Emma begins looking toward the blocks and reaching for them. Marcy intentionally waits, giving Emma time to try using words to express her desire for the blocks. Knowing that Emma has not accomplished the target skill before, Marcy is prepared to offer support if or when necessary. After waiting three seconds, Marcy provides a verbal prompt for Emma to use words by modeling, “Blocks.” Marcy waits three more seconds to see if Emma will imitate. When Emma does not imitate her, Marcy again models saying, “Blocks,” and then provides the desired blocks. Marcy knows the most important thing is to sustain the interaction with Emma, which is why she provides Emma with the desired item (blocks) after modeling. Over time, Emma will begin to imitate and eventually use the word “blocks” spontaneously.

Individualization is a key component of high-quality, inclusive early education. To plan and use practices that implement individualized teaching and learning, educators like Marcy offer children with and without disabilities multiple and varied opportunities to learn and grow during their daily activities and routines (Johnson, Rahn, & Bricker 2015). This aligns with NAEYC’s recent position statement on developmentally appropriate practice, which states that educators “are prepared to individualize their teaching strategies to meet the specific needs of individual children, including children with disabilities and children whose learning is advanced, by building upon their interests, knowledge, and skills” (2020, 12).

To be effective, individualized teaching includes a child’s entire educational team—teachers, specialists, and other professionals who collect assessment information, identify learning outcomes, use instructional strategies, and monitor progress. When team members work together, it is consistent, and both adults and children benefit (Spence et al. 2021).

Embedded learning opportunities are one instructional method that a team in early childhood settings can use to meet all children’s needs. Embedded learning opportunities align with research-supported practices (DEC 2014; NAEYC 2020) and occur in three parts. First, an adult provides an antecedent, such as prompts or other cues, to elicit a targeted behavior or skill in a child, which may be identified ahead of time if the child has an Individualized Education Program (IEP). Second, the target behavior occurs either spontaneously (the child initiates it) or with support (the skill is prompted and/or modeled by an adult). The embedded learning opportunity concludes with the delivery of a motivating consequence, such as Marcy giving Emma the blocks in the opening vignette. Teachers who use this method offer many opportunities for children to practice target skills, helping them learn how to use those skills across multiple routines (Johnson et al. 2015).

According to the Division for Early Childhood (2014), effective embedded learning opportunities are

- › based on a child’s participation in everyday activities and routines
- › target specific skills
- › embedded throughout daily activities and routines
- › delivered as planned

In this article, we describe a five-step, data-informed process to help teachers find ways to create embedded learning opportunities within everyday classroom activities and routines and to ensure all children’s inclusion in the classroom community (NAEYC 2020, 22). This process also provides adaptations that can be used by teachers like Marcy who have children with varying abilities—including children with and without disabilities—in their early childhood settings such as elementary classrooms, family child care, and center-based programs.

Step One: Gathering Meaningful Data Through Authentic Assessment

Marcy arranged to meet with Emma’s family as soon as Emma enrolled in the preschool program, and she continues to meet with them during the year. At one meeting, Marcy asks, “What are your hopes and dreams for Emma?” Emma’s mother shares that she would love to be able to better understand Emma. She indicates that communication is a challenge because Emma is using sounds that her family does not understand. Her father nods in agreement. Marcy follows up by saying, “I hear you saying that you would really like to be able to more effectively communicate with Emma. Am I hearing you correctly?” Emma’s mother and father say yes.

Based on the information the family provides, Marcy decides to use observations to determine how Emma is currently communicating within classroom activities and routines. Collecting this type of information will help Marcy to understand Emma’s communication in her daily environment so Marcy can create suitable learning opportunities.

The next day, Marcy sets out to observe Emma’s communication. During the class’s daily snack time, Emma eats yogurt. Today, Marcy gives Emma a spoon and bowl, but she “forgets” the expected yogurt to see if and how Emma will ask for it. Marcy records her observations and has a journal ready to document Emma’s engagement.

The first step when creating embedded learning opportunities is to collect information about the child so teachers can make intentional, developmentally, and contextually appropriate decisions when working toward a target skill (DEC 2014; NAEYC 2020). This includes gathering information during everyday

activities and routines about the child’s behavior, knowledge, interests, preferences, and social and cultural contexts. Teachers can do this through observation and by using checklists, rating scales, family interviews, work samples, and other techniques to learn about the children in their classrooms and the families they serve.

Observations can be particularly helpful and can occur live or via audio or video recordings to help teachers learn about a child’s participation and engagement in various routines and activities. Observations can occur during lunchtime, outdoor time, and instructional times. Teachers may arrange circumstances so they can observe a child’s behavior or skill in a situation that would not usually occur on its own (Bagnato, Neisworth, & Pretti-Frontczak 2010)—such as Marcy forgetting to give Emma yogurt. Having an informal checklist or anecdotal record ready can assist teachers in quickly documenting these types of observations.

Family interviews are another helpful way to gather important information about a child and to better understand a child’s social and cultural contexts. Teachers can ask families about their child, their family dynamics, and any questions, hopes, or priorities they have regarding their child. Family interviews can occur when a child first joins an early education program and can continue throughout the year.

Step Two: Using Data to Identify Learning Goals and Outcomes for Embedded Instruction

After observing and recording data, teachers use the information they have gathered to develop learning goals. These goals should “recognize individual variation in learners and allow children to demonstrate their competencies in different ways” (NAEYC 2020, 20). They should also align with a program’s overarching curriculum and a child’s context, strengths, and interests. Once teachers know what goal they are working toward, they can embed learning opportunities throughout the day to help children reach the goals. Learning goals must be clearly defined and recorded in planning documents, such as in a child’s IEP if applicable.

Embedded learning opportunities should include three components (Johnson et al. 2015):

- › **Behavior:** This should be observable and measurable, meaning that it can be seen or heard and documented. For instance, it would be difficult to collect data on the outcome *Emma will demonstrate conversational skills* because an observable behavior is not included. (What does she do to demonstrate conversational skills?) A measurable alternative is *Emma will use single words*, which can be observed and documented.

Besides being measurable, the targeted, observable behavior should also support a child becoming adaptive, socially connected, and engaged in their learning environment (DEC 2014). For example, *Emma will use words so that she can communicate wants and needs* is related to engagement; *Emma will use 10 different words* is not. Adding the functional statement *so that Emma can communicate wants and needs* helps ensure that the learning goal engages Emma in her everyday environment.

- › **Condition:** Teachers should specify the context in and circumstances under which the measurable behavior will occur. Will it be during lunch, free play, or other routine activities, or will the skill occur when prompted by the teacher? For example, *Emma will use words when provided opportunities to communicate a choice*.
- › **Criterion:** How will teachers measure success? For example, *Emma will use words to express her wants or needs a minimum of three times per day*. When Emma is able to meet this criterion of using words to communicate three times a day, then she will have successfully achieved the learning goal.

Marcy's observations have given her a rich picture of Emma. Marcy sees that Emma enjoys playing in the block center. She builds detailed structures and incorporates a variety of toys such as cars, people, and dinosaurs. She engages with materials for a sustained period of time, uses gestures such as pointing and reaching, and vocalizes sounds to comment and request.

Creating Embedded Learning Opportunities for Emma

5-Step Process	A Step-by-Step Plan
Step 1 Gathering data	Emma's preschool teacher, Marcy, collaborates with Emma's parents to support her social and communication development. Marcy meets with Emma's mother during a home visit and asks about Emma's social interaction and communication with her family at home. Emma's mother shares that Emma rarely engages in activities. She also shares that Emma enjoys stories.
Step 2 Using data to identify learning outcomes	Marcy and Emma's mother want to focus on helping Emma be able to make a choice throughout daily activities and routines. To do this, Emma will begin by using gestures like pointing and single words to make a choice and to comment.
Step 3 Planning and using embedded learning opportunities	Marcy will create opportunities for Emma to communicate throughout daily activities and routines. Marcy will offer Emma choices between books or instruments, use wait time, and model language targets (antecedents). When Emma approximates single words (behavior), Marcy will expand and extend her language and provide her with the desired activity, material, or action (consequence).
Step 4 Implementation fidelity	Marcy will gather data on the embedded opportunities she is creating for Emma during daily activities and routines.
Step 5 Monitoring progress	Marcy will monitor Emma's progress through documentation of Emma's use of single word approximations and words throughout daily activities and routines. Marcy will share the graphed data with Emma's mother to discuss patterns and progress toward Emma's goal.

Her observations also indicate that Emma's difficulty communicating her wants and needs using words is causing frustration. Marcy turns to the rest of Emma's educational team so they can outline Emma's learning goals together. Her team consists of her mother, father, teacher, and speech language pathologist who will work together to support Emma to reach her learning goal. The team determines the following goal to be appropriate for Emma: *When provided opportunities to make a choice, Emma will use single words to communicate wants and needs a minimum of three times per day.* This goal includes a condition statement (*when provided opportunities to make a choice*), a measurable behavior that will help Emma become adaptive, socially connected, and engaged in her environment (*will use single words to communicate wants and needs*), and a criterion (*three times per day*).

Step Three: Planning and Using Embedded Learning Opportunities

Armed with Emma's learning goals, the team looks at Marcy's daily classroom plans and scripts out strategies to propel Emma toward meeting those goals, including ways she can adjust Emma's environment and questions that she can ask Emma. The team identifies different activities throughout the day when they can offer choices and determines who will offer them. The activities they decide on include circle time, child-led play, and meal time.

During circle time, Marcy can provide a choice between two types of materials or activities (musical instruments, books). The individuals to facilitate embedded learning opportunities can include teachers, family members, and classmates.

During child-led play, another child can offer a choice between areas of the room or centers in which Emma would like to engage (blocks, dramatic play).

During meal time, Marcy or Emma's parent can give choices so Emma can select what she would like to drink (milk, juice).

Once the team develops measurable learning goals, they can plan for, design, and begin to implement an embedded learning opportunity (Johnson et al. 2015) within everyday activities and routines that is aligned with a child's IEP goals, if applicable.

To do this, the team must review their plan of when to provide the opportunity and who is responsible for it. It is also beneficial to review the plan regularly to determine how it is working and any changes that need to be made. To be effective, team members must regularly use embedded learning opportunities and increase the number of times the child has to practice and attain targeted skills. If the child has a team of providers (special education teacher, speech-language pathologist), the teacher must ensure they are familiar with the embedded learning opportunity and understand how to use it (Snyder et al. 2015). Specific tools, such as an activity matrix, can help ensure this occurs (Sandall & Schwartz 2008). (See "Activity Matrix for Emma" on page 13 for an example.)

Throughout the embedded learning opportunity process, teachers are continually planning and evaluating the appropriateness of a child's learning goals, the authenticity or meaningfulness of the learning opportunity's prompts and other cues, and the effectiveness of the feedback, follow-up support, and consequences offered. Completing the full cycle of an embedded learning opportunity (antecedent; target behavior; consequence) is essential, and multiple learning opportunities should be planned for and implemented within and across daily activities so that a child has the time and support to make progress in and outside of the early childhood setting (Johnson et al. 2015).

Step Four: Accurate and Consistent Implementation

Marcy wants to learn more about embedded learning opportunities, so she attends an online webinar and reviews the recording of the webinar regarding embedded learning opportunities on the Division for Early Childhood website. During this webinar, many resources are shared that she thinks will support her practice. She uses the “Embedded Instructional Practices Checklist” as a self-checklist to reflect on her practices. She also asks a peer teacher to observe and record her interactions with Emma across three routines to ensure she is using the embedded learning opportunity the way she planned. Although Marcy was initially nervous asking someone to observe her, she feels much more confident in her practice afterward. The information she and her peer collect also suggests that Marcy is delivering the embedded learning opportunities as intended.

It is important that embedded learning opportunities are delivered as planned and that teachers have supports, such as coaching and performance-based feedback, to ensure that the plan is followed consistently and accurately; that is, with *implementation fidelity*. Support can come in a variety of forms, including training paired with peer observation and feedback (Barton & Fettig 2013). If the teacher or other individuals working with the child did not implement the embedded learning opportunities as planned, they should make additional efforts to improve how the work is done, then reassess fidelity. This cycle would continue until satisfactory levels of fidelity are reached.

For example, as Marcy did, team members could create a checklist that aligns with the plan they created. They could use this checklist by asking a peer to monitor the implementation of embedded learning opportunities to determine if they are being used as intended. Both affirmative and suggestive feedback from peers is one way to support practice. Affirmative feedback should identify how and when an observer noticed an embedded learning opportunity being delivered as planned, and suggestive feedback should identify how and when an observer noticed that an embedded learning opportunity could have been delivered as planned.

Activity Matrix for Emma

Target behavior: <i>Emma will use single words to communicate wants and needs.</i>				
Routines	Initiator	Prompt	Behavior	Consequence
Mealtime	Teacher and family	Provide insufficient quantities of desired items	Single-word phrase (“Crackers.”)	Receive desired item
Outside play	Teacher and family	Provide choices (“Do you want the blue ball or red ball?”; “Do you want to swing on the swing set or dig in the sandbox?”)	Single-word phrase (“Blue”; “Sandbox.”)	Receive desired item or activity
Caregiving routines (bath time)	Family	Use wait time/time delay to turn on water (Place hand on faucet with an expectant look)	Single-word phrase (“Water.”)	Receive desired activity or material
Transition routines	Teacher and family	Use “mand-model” (Before opening the door, the teacher or parent waits for the child to say, “Open” and waits for a response. If a response is not provided, the teacher or parent says, “Open” and opens the door.) (Miguel 2017)	Single-word phrase (“Open.”)	Receive desired action

Once the teacher and other individuals working with the child deliver embedded learning opportunities as planned, they can evaluate whether the instruction is benefitting the child, which is described in more detail next. To measure implementation fidelity, the team may choose to use already existing tools, such as the “Embedded Instructional Practices Checklist” (Early Childhood Technical Assistance Center 2015) or webinars offered by groups such as the Division for Early Childhood (www.dec-sped.org/learning-decks).

Embedded learning opportunities provide children with meaningful instruction that enhances participation as well as skill development over time and in a variety of settings.

Step Five: Monitoring Progress Toward Targeted Learning Goals

Marcy initially created observational notes to record implementation and Emma’s progress, but she realizes she will not have the time to take notes at the level of detail she needs to make informed decisions. Instead, she creates checklists that she can use to quickly identify information that would accurately inform her decisions. The checklist outlines the routines and embedded learning opportunities that will be implemented for Emma. It also has a space to document how Emma responds as it relates to the goal.

Much thought and energy go into creating and implementing embedded learning opportunities, which lead to the question, have those efforts helped? To determine whether a child has made meaningful progress toward a set goal, educators often use formative assessments, which are intended to occur on an ongoing basis and focus on targeted behaviors or knowledge. (To learn more about formative assessments, read “What’s Next? How Learning Progressions Help Teachers Support Children’s Development and Learning,” by Peter L. Mangione, Tamara Osborne, and Heidi Mendenhall in the July 2019 issue of *Young Children*.) Teachers and others collect and evaluate assessment information related to both the child’s performance before and once the plan is implemented.

Sample Progress Monitoring Tool

Goal: <i>When provided opportunities to make a choice, Emma will use single words to communicate wants and needs a minimum of three times per day.</i>			
Routines	Embedded Learning Opportunity	Child Response to Opportunity	Notes
Circle time	Choice between materials	Y N P	
Child-led play	Choice between centers	Y N P	
Meals	Choice between drinks	Y N P	
Total yes:			
Total no:			
Total partial:			

Note: Y=yes (demonstrates goal), N=no (does not demonstrate goal); P=partial (partially demonstrates goal)

Teachers should consider two factors when monitoring progress: First, is the measurement tool quick and easy to implement within daily activities and routines? Second, is the tool sensitive to small amounts of change? The aim of progress monitoring is for data to be collected regularly. By selecting a simple tool that takes minimal time to use, such as a teacher-developed checklist like Marcy's, collecting the data will be more feasible. Additionally, by using a tool that measures outcomes in small increments, it can detect changes in performance that may represent meaningful growth. (See "Sample Progress Monitoring Tool" on page 14 for an example of a check list.)

Often, educators find it useful to look at data visually through a graph or table; patterns can become more easily discernible that way (Lane & Gast 2014). For example, if the data (visually or otherwise) show little progress or a decline related to a targeted goal, then the team can identify a different approach. Any changes in the plan should continue to be monitored for consistency and accuracy and for any changes in the child's growth. On the other hand, if the data indicate an increase or improvement toward a targeted goal, the teacher would continue with the current plan and with progress monitoring until the goal is fully met.

Conclusion

Embedded learning opportunities are one way teachers can support children both with and without disabilities in their classroom. This method provides children with meaningful instruction that enhances participation as well as skill development over time and in a variety of settings. Teachers and other individuals can use the five-step process described in this article to ensure they are planning and delivering embedded learning opportunities in an instructionally and functionally sound manner with the ultimate goal of supporting children to maintain and generalize target skills.

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References for this article can be found online at [NAEYC.org/yc/winter2021](https://naeyc.org/yc/winter2021).

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