

# Monitoring Child Progress in Early Childhood Special Education Settings



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- Tracking objectives.
- Naturalistic data.
- Monitoring and recording.
- Embedding personalized instruction.
- Teacher-friendly matrix.

As these descriptors indicate, *data* is the word. This article explores ways that teachers of young children can collect, record, and monitor data on the achievements of the children, particularly children with disabilities.

Programs for young children with disabilities are lively and dynamic. Research reveals that young children with disabilities learn best when they are actively engaged in activities (Bricker, Pretti-Frontczak, & McComas, 1998; Raver, 1991). Within what may look like controlled chaos, teachers attempt to teach each child what that child needs to learn to better participate in the activity. Teachers also attempt to track each child's progress. Monitoring and gathering information about a child's progress toward specified objectives are necessary to document skill acquisition and to determine if interventions are actually helping a child learn. Although teachers of young children are

comfortable creating environments that promote learning and positive interactions, many teachers report that finding ways to track each child's progress can be challenging. These educators need a "teacher-friendly" strategy for embedding monitoring into routine events.

## Tracking Individual Objectives

When preschoolers have disabilities or developmental delays, teachers need careful planning to ensure that all activities are meaningful and developmentally appropriate for every child. Rather than pull children out for one-to-one teaching sessions with the teacher, teachers embed instruction of individual objectives into classroom routine events and activities such as circle, snack, and center times (Gargiulo & Kilgo, 2000). Target objectives are taught through teacher-child and child-child interactions that occur in the classroom. To foster these interactions, teachers adjust scheduled activities to accommodate the different developmental levels found in their settings in ways that are meaningful to the activities (Bricker et al., 1998).

Although embedding individual instruction into routines is a simple concept, it can be challenging to implement. Despite the fact that teachers report they embed individual objectives into routines, few have been able to embed successfully (Pretti-Frontczak & Bricker, 2001). To embed instruction effectively, teachers need a systematic method for keeping track of objectives. Without this structure, many teaching and learning opportunities may be overlooked (Horn, Lieber, Sandall, & Schwartz, 2001).

To aid in planning for embedding individual objectives, a teacher can use a group objective matrix to help keeping track of each child's individual objectives (Raver, 2003). A group objective matrix lists skills or behaviors each child needs to learn by domain. Figure 1 shows a group objective matrix for the eight children in Ms. Kelly's early childhood special education preschool class.

The matrix alerts teachers to opportunities that must be created within ongoing routine activities and events so that specific skills and behaviors can be taught. It encourages teachers to teach

objectives throughout the day, within planned (e.g., circle time, art center) as well as unplanned activities (e.g., arrival, walking to buses). It offers teachers a quick reference so that activities can be shaped to make them more suitable learning situations for each child. Using a matrix allows teachers to teach individual children the skills they need to learn when the skills are related to their play or a class activity (Wolery, 2001).

### Teaching and Monitoring Learning

Besides keeping track of what individual children need to learn, a teacher needs to monitor if a child is learning the targeted skills and behaviors. In other words, a teacher needs to know whether the interventions provided are effective (Raver, 1999). Monitoring must occur regularly. To set up a system in which individual objectives are embedded as well as monitored during routines, teachers need to follow three steps:

1. Identify the skills to be taught.
2. Teach the identified objectives within activities and routines.
3. Determine how and when monitoring will occur.

Each of these steps is discussed using Ms. Kelly's group objective matrix from Figure 1.

#### Step 1: Identify the Skills to Be Taught

Drawing from multidisciplinary assessments, criterion- and curriculum-based assessments, checklists, direct observations, and interviews with the family, a teacher identifies critical skills each child needs to learn by domain. Often just the process of selecting and writing objectives on a matrix increases the chances that teachers will structure appropriate learning episodes within scheduled activities and routines (Horn et al., 2001).

For example, during each activity, Ms. Kelly referred to the group objective matrix so she was aware of skills that needed to be taught to particular children. During Choice Time, Ms. Kelly asked Sarrie to tell her about Li's puzzle (expressive language objective). In the

same activity, after glancing at her matrix, Ms. Kelly remembered to make sure Juan showed his picture on the Choice chart before he took his toy (receptive language objective). She directed Jeffrey to select the paper-chain materials box so he could be taught his fine motor objective of cutting. Without the matrix, Ms. Kelly may have focused only on showing each child how to better use the material selected from the shelf. She may have overlooked these opportunities for individual children to practice their specific target skills.

Objectives on a group objective matrix may have to be rewritten so they represent broad competencies that are more easily woven into ongoing activities and routines. For example, Sarrie's receptive language target taken from a



critterion-referenced assessment tool read, "Follows simple commands." One of her cognitive objectives from the same tool read, "Understands next to, top, bottom, in front of, behind." Ms. Kelly decided to combine these objectives into one new objective: "Follows a command using one object and a location" (e.g., "Put the book next to the chair"). By rewriting the objective, the teacher made it more functional and compatible with center activities in her classroom. In this way, she increased the chances that she will teach the objective within her routines.

#### Step 2: Teach Identified Objectives During Activities and Routines

When children are taught skills within the context in which they will use the skill in, it is more meaningful to the

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child (McLean, Bailey, & Wolery, 1996). Additionally, skills taught within routines may produce greater generalization to different materials and people (Sandall, McLean, & Smith, 2000). For these reasons, teachers should attempt to teach individual objectives within activities and routine events as much as possible. Naturally, there may be activities in which it is difficult to embed certain individual objectives. In that case, a teacher may need to arrange a situation to specifically teach that skill. In general, however, teachers should avoid isolated teaching episodes because skills learned in isolation may be less likely to lead to a generalized, functional skill.

Nonetheless, merely creating an opportunity for learning may not be sufficient. By setting up a center for sorting sock and mitten pairs, a teacher is arranging an activity to expose children to sorting. Yet, without direct instruction, many children with disabilities may not learn the concepts of "same" and "different" from this activity alone. Teachers must structure short instructional episodes within events and routines to teach the target objectives and ensure that intended learning occurs (Horn et al., 2001).

During Opening Circle, for example, Ms. Kelly asked Li to get the witch hat for their song that had purposely been placed on the top shelf of the bookcase (gross motor objective). Two steps had been placed in front of the bookcase so Li had to climb to get the hat. Before Opening Circle began, the paraprofessional was assigned to help Li navigate the stairs because Li was unable to do this task independently. With careful planning, Ms. Kelly created a short,

Figure 1. Ms. Kelly's Group Objective Matrix

Child	Fine Motor	Gross Motor	Cognitive	Expressive Language	Receptive Language	Personal/Social	Self-Help
Jackie	Push small obj. in 3/3 2 days	Squats with support 3/3 2 days	Sorts obj. into same/diff. 3/3 2 days	Uses action words MU=1 3/3 4 days	Shows red/green 3/3 2 days	Gives obj. to friend when req., GMA 3/3 2 days	Washes hands, VA 3/3 2 days
Li	Completes 4 piece puzzle 3/3 2 days	3 steps, same first placement 3/3 2 days	Imitates the function of new objects/toys 3/3 2 days	Names obj/actions MU=1 3/3 2 days	Shows category (animal, family) 4/3 2 days	Plays with friend, 3 min. 1/1 3 days	Scrapes food with spoon 1/1 3 days
Sarris	Mixes circle/round 3/3 2 days	Walks 2 ft. on tiptoes, carrying obj. 3/3 2 days	Makes forms with playdoh 1/1 2 days	Describes obj/action and quality MU=3 3/3 2 days	Follows command using 1 obj and location 3/3 2 days	Takes 2 turns with friend, VA 1/1 2 days	Uses scissors, zippers, snaps 3/3 2 days
Maddy	Sorts by shape (circle) 3/3 2 days	Hops in place (3 hops) 3/3 2 days	Nurses obj. removed 3/3 2 days	Describes actions of others, -leg verb MU=3 3/3 2 days	Shows tall/short 3/3 2 days	Attempts pretend play with friend, 2 min. 1/1 3 days	Drinks with one hand, some spilling 1/1 3 days
Jeffrey	Cuts with scissors, 2 in. 3/3 2 days	Hops with support 3/3 2 days	Imitates circle, horizontal line 3/3 2 days	Describes shape, color of obj. MU=4 3/3 2 days	Shows obj. by usage, VA 3/3 2 days	Cooperative play, 5 min. 1/1 3 days	Prepares snack with little guidance 1/1 3 days
Milana	Unscrews top/lid, 2 beads 3/3 2 days	Kicks ball/object 2/2 3 days	Imitates block patterns T shape 3/3 2 days	Names obj/actions MU=2 3/3 3 days	Shows friends pic/obj. when req. 2/2 2 days	Takes 2 turns with peer/friend 3/3 2 days	Drinks from cup without lid 1/1 3 days
Jackson	Strings obj. (beads, noodles) 3/3 2 days	One foot standing, 5 sec with support 2/2 3 days	Putz shapes in 3 piece puzzle, VA 3/3 2 days	Uses sign/word to name obj/actions MU=1 3/3 2 days	Shows pic/obj. when req. 3/3 2 days	Greets friends/family 2/2 3 days	Self-feeds finger foods 1/1 3 days
Juan	Holds and explores obj., 5 sec 3/3 2 days	Grabs toys, props, 1 3/3 2 days	Shows facial parts when req. 3/3 2 days	Vocalizes to request hi/bye 3/3 3 days	Shows own pic. when req. 3/3 2 days	Looks at friend in play, 3 sec. 1/1 3 days	Assists in holding cup, GMA 1/1 3 days

## Communication

A group objective matrix can assist teachers in structuring communication intervention. To facilitate communication and language, teachers need to provide linguistic models that are slightly more advanced than a child's current language level (Kaiser & Delaney, 2001). In inclusive and self-contained early childhood special education (ECSE) classrooms, teachers may find it difficult to remember the precise expressive developmental level of each child. Yet to be effective communication facilitators, they must have this information at their fingertips. The best way to establish a child's expressive language level is to conduct a language sample that yields a child's mean length of utterance (MLU). Unfortunately, not all ECSE teachers have access to this kind of information, which is typically supplied by speech-language pathologists.

A simpler way to identify a child's expressive communication level is to determine a child's mean utterance (MU). Mean utterance is the approximate length of a child's spontaneous vocal or verbal utterances. To gain this information, a teacher observes a child for two 15-minute play situations with peers or adults, recording all speech sounds and words the child produces. After these observations, a teacher judges if the samples collected are representative of what the child tends to produce spontaneously. If a child is verbal, the most frequent number of words the child produced is written on the matrix under expressive language as MU. For example, "MU = 3" means Maddy's "typical" spontaneous utterances are three words, such as, "Want that car." During the observations, Maddy also produced one and two-word utterances occasionally, but they were not typical of her speech in the classroom. With the MU listed, teachers are able to match their communicative models and demands to the exact expressive abilities of each child (Lederer, 2002). This can keep a teacher from overwhelming a child or being satisfied with expressive responses that are below a child's abilities.

If a child is preverbal, the most frequent speech sounds (vocalizations) the child produces during the observations are recorded. For example, Juan, who has multiple disabilities and is preverbal, produced primarily /m/ and /d/ vocalizations. Research has shown that children are more likely to attempt new words that begin with sounds they can already produce and have the same number of syllables (Lederer, 2002; Stoel-Gammon, 1998). With this information in front of her, Ms. Kelly can now attempt to pair Juan's high-frequency vocalizations with nouns (e.g., *milk* for /m/), animal sounds (e.g., *moo* for /m/), and action words (e.g., *drink* for /d/) within activities and routines.

This type of planning makes communication modeling more effective because it is individualized (Carta et al., 2002). And, by embedding occasional communicative prompts into routines, teachers teach a child to produce language in context (Kaiser & Delaney, 2001).

individualized teaching session for Li within circle time. She knew Li needed a good deal of practice with this skill, so she structured several teaching and learning opportunities throughout the day. Later, Li was asked to climb the steps to the water fountain to fill the watering can so the class could water the beans they had planted. In the Art Center, Li was asked to put the sponges in the storage box kept on the top shelf next to

the sink, requiring Li to climb three steps to reach the box.

The matrix focused Ms. Kelly's attention on what Li actually needed to learn within an activity, rather than how well she planted her beans in the Science Center or how well she painted her mobile in the Art Center. This planning ensured that Li had sufficient practice to learn the skill (Raver, 1999; Wolery, 2001). This type of proactive planning is bene-



ficial in supporting communication skills in young children as well (see box, "Communication.")

### Step 3: Determine How and When Monitoring Will Occur

Once a skill has been taught for a few days, it is time to monitor a child's progress. Routines offer a good context for data collection. Data boxes are in the lower right-hand corner of each objective box on a group objective matrix. This allows a teacher to record data on a child's responses to teachers' probes. Although naturalistic data—data taken during ongoing activities—are not as precise as trial-by-trial probes or even data taken in one-to-one teaching and testing sessions, it is nonthreatening and evaluates a child's functional use of a skill (Linder, 1993; Sandall et al., 2000).

In reality, teachers are not only interested in knowing if a child can perform a skill when requested, but are also interested in knowing if a child can perform a skill in response to natural stimuli. Like teaching, data collection needs to be dispersed throughout the day. Data can be taken any time during an activity or routine, such as during clean-up or during transitions (Werts, Wolery, Holcombe, Vassilaros, & Billings, 1992). By monitoring a child's acquisition of individual objectives within routines, a teacher is not only tracking a child's progress, but is monitoring whether a child can demonstrate the skill when it is needed (Puckett & Black, 2000).

Data will be taken more frequently if the collection process is quick and does not disrupt the flow of an activity. Ms.

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Kelly's group objective matrix allowed her to frequently monitor individual children's acquisition of skills. For instance, she monitored Jackie's progress on her expressive language objective at the Construction Center (e.g., "Uses action words, MU = 1"). Ms. Kelly described what Jackie was doing then said, "Jackie, tell me what Mikaela's doing," while pointing to Mikaela. Jackie looked up from her building logs, then over at Mikaela and said, "Fall." Mikaela was building a "house" and had knocked it down. Ms. Kelly reinforced Jackie's response ("Yes, Jackie, blocks *fall*"). She then wrote a plus (+) in Jackie's expressive language data box. If Jackie had not responded correctly, a circle would have been recorded, and Ms. Kelly would have given her a verbal model such as, "Blocks fall. Say, *fall*," to teach the skill.

Ms. Kelly decided that the criterion for mastery of this skill was three out of three probes (100%) correct, for 4 days. Generally, it is a good idea to allow at

### Matrix Notations

*GMA*: graduated manual assistance. This means that some level of physical assistance will be given to help a child perform a skill. This assistance is systematically faded as the child is able to complete the task independently.

*M*: model. The teacher will show a child how to perform the task or skill.

*VA*: verbal assistance. The teacher will give verbal assistance to help a child in performing a task or skill. For example, on Jackie's self-help objective, VA means Ms. Kelly will give verbal directions to help Jackie complete the task, such as, "Now turn the water off."

*I*: independent. This means a child will do the task or skill without teacher support. This is noted only when a child earlier required some level of support. For example, on Juan's gross motor objective, he must now get to and grab toys out of his reach without help from Ms. Kelly.

### When Should Teachers Take Monitoring Data?

Teachers tend to find a system that works best with their instructional schedule, the needs of the children in their setting, and their staff schedules. Many teachers report that training paraprofessionals to take monitoring data on specific children is well worth the effort. In fact, involving paraprofessionals and other support staff



in the development of a group objective matrix is a good way of helping all professionals view the whole child. When this information is shared, related service providers such as speech-language pathologists and physical therapists are encouraged to use activities that support each child's objectives across all domains, not merely the objectives within a specialist's area.

Some teachers attempt to take data on at least one skill, in one domain, for at least one child in each activity or routine event. Others assign data days; that is, although they teach individual objectives from the Group Objective Matrix every day within activities, they decide to collect data on all children's fine and gross motor objectives on Mondays, collect data on expressive and receptive language and personal and social skills on Tuesdays, and so forth. To get a sound sample of how a child is demonstrating a skill or behavior under natural conditions, teachers need to select the activity or routine event that is most natural for displaying the skill that is being monitored. Teachers must take data on child progress regularly so that they can make informed intervention decisions for their children (Meisels & Atkins-Burnett, 2001).

least 5 minutes between probes and to attempt to evaluate skills when they are most natural to an activity. To monitor learning in children who learn more slowly or those who need partial or full assistance, the level of support necessary for performing a skill is noted on the matrix (see box, "Matrix Notations").

Although teachers teach the skills on a matrix every day, some teachers find they are not able, nor is it necessary, to take data every day on every objective (see box, "When Should Teachers Take Monitoring Data?"). Strategically placing copies of the matrix on clipboards around the classroom (e.g., in the homemaking corner, near each center, in the restroom, near the snack area), allows teachers to refer to it frequently, as well as take data, without interrupting ongoing interactions with children. Tying a pencil to the clipboard can make using this monitoring system easier. Training paraprofessionals to take data occasionally can also free teachers for other duties.

At the end of the day, data collected on the matrix are transferred to graphs or data sheets and files to give teachers a visual record of each child's performance on target objectives. After being

transferred, data are erased and the matrix is reused the following day. When an objective is mastered (e.g., the child reaches the established criterion), that objective is erased and a new objective is written in that space. This system can significantly reduce the amount of

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paperwork teachers need to be responsible for each day.

### Final Thoughts

Using a group objective matrix allows teachers to keep track of what each child needs to learn as well as to monitor their progress toward selected target objectives. The strategies discussed for

embedding objectives and monitoring child progress within routines are useful for both inclusive and self-contained programs. To reliably embed targets into activities, teachers must systematically create teaching opportunities for each child to be taught the skills they need. Using a matrix guarantees that teaching, maintenance, and monitoring of skills and behaviors are never overlooked. Like all worthwhile strategies, embedded instruction and monitoring techniques may require practice before teachers are completely comfortable using the system.



By monitoring child progress on targeted objectives during regular activities and routines, teachers are able to select toys and objects that motivate a child, as well as avoid the trap of requiring a child to respond on command to traditional assessment tasks and materials. Teachers can also use instructional strategies that accommodate each child's sensory, physical, communicative, and temperamental differences (Neisworth & Bagnato, 2000; Sandall et al., 2000).

Teachers are likely to take data more often when monitoring is embedded into activities and routines. Further, monitoring frequently will ensure that teachers modify ineffective programs. Monitoring within routines and activities gives teachers an insight into a child's authentic abilities and makes data collection an integral component of the instructional day.

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