4 Creating Natural Opportunities for Learning

Kimberly has been thinking about her son, Daniel, and what she can teach him to help him be more independent in and around the home. She wants him to learn some skills that are relatively simple, such as using the buttons to turn on his TV or computer, pointing to a drink in the refrigerator and saying, "Apple juice," putting his dirty cup in the sink, etc. She also would like him to learn more complex skills—putting toothpaste on his toothbrush and brushing all his teeth reasonably well; setting the table for the entire family at dinner time; looking at a picture-array of items to buy in the supermarket and putting them all in the cart. Kimberly expects Daniel to respond to her requests to start certain activities but she also wants him to initiate some of these activities so that she doesn't feel as if she is running his life. How can she begin to plan to use everyday activities to create learning opportunities for Daniel?

We advocate using many common activities around the home and neighborhood to create natural opportunities for learning. While children learn many important skills at school, there are some skills that are unique to the home and neighborhood that are virtually impossible to replicate at school. And, many of the skills learned at school need to be used at home. Schools are a time-limited resource, while children will live in a home-like setting for the rest of their lives. Parents can be excellent teachers without making their homes into a school. In this chapter, we will look at how to find many opportunities to teach your child within your home and your particular community. Your child will

need to learn different types of activities and skills and thus you will need to design different types of lessons. We will describe some of the most common issues related to designing effective lessons and provide examples of how they can be incorporated into everyday routines.

Discrete Lessons

Some activities are relatively short and sweet. That is, they begin with a simple instruction or request, and are followed by reasonably straightforward tasks. For example, you could ask your daughter to come to you, bring you a fork, wipe her nose with a tissue, or tell you the name of a toy that you're holding. Each time your child succeeds, she receives praise and possibly some other simple reward. Notice that the form or type of response is not at issue—the correct response can involve doing something or communicating about something. We call these direct, straightforward types of lesson *discrete trials*. In this case, *discrete* means distinct, separate, or isolated, while *trial* is synonymous with opportunity.

You will recognize that schools are filled with discrete trial types of lessons—rote learning about math facts, names of country or state capitals, and names of objects or their attributes are all examples of this type of lesson. The age of the student does not determine whether or not a lesson involves a discrete trial; high schools students and preschoolers alike learn many discrete trial lessons. In fact, higher levels of education often involve greater amounts of rote learning—for instance, all the elements on the periodic table, all the states and their capitals, all the presidents, etc. So, when you read our discussion of discrete trials, please do not think that this involves a special kind of lesson for children with autism or other learning difficulties. Everyone needs to learn many different discrete trial lessons at school, home, and in the community.

Consider some of the most common discrete trial types of lessons for children to learn at home, as listed in Table 4-1 on the next page. Also consider examples of discrete lessons our children need to learn in the community, as listed in Table 4-2.

The Role of Repetition in Teaching Discrete Skills

When you have identified discrete skills for your child to learn at home, you also need to identify many opportunities for your child to

Table 4-1 | Discrete Activities at Home

Area	Discrete Trial Activity
Kitchen	Respond to "Give me the spoon"
Bedroom	Kiss Dad goodnight
Living Room	Point to picture in book Mom is reading
Dining Room	Ask for drink
Bathroom	Choose toothbrush
Backyard	Kick a ball

Table 4-2 | Discrete Activities in the Community

Area	Discrete Trial Activity
Mall	Throw a coin in fountain
Grocery Store	Point to desired cereal
Playground	Ask for swing
Neighbor's house	Greet adults and children
Library	Choose from three books offered by Mom
Haircut	Take lollipop from bowl
Dentist's office	Respond to "Open up!"

practice those skills. But you have to make sure that in repeating a skill you are not actually reducing the likelihood that your child will learn it. This may happen if you remove your child's motivation to perform the skill or ask her to over-practice it. You also want to arrange for the skill to be repeated in a natural way that makes sense to your child.

Does Repetition Fit the Situation?

In general, we all know that repetition is often beneficial to learning. If I want to learn to be good at shooting foul-shots in basketball, shooting the ball one time per week will not lead to much improvement. But, while we know that practice may help, it is not always easy to know how much repetition we should plan for at any one time.

In fact, sometimes repetition may be counterproductive to the goal of enhancing the likelihood of learning. Imagine an interaction with your daughter, who, for the first time in her life, says, "Slide" while standing by the backdoor and pointing to the slide that she obviously wants to play on. Would you say, "Great! Go outside," but when she took one step out the door, pull her back inside and immediately say, "Now say it again!" We think everyone will recognize that such a tactic would be effective if we want the child to have a tantrum but this type of repetition will not help her learn to ask to go outside. Instead, she should immediately go to play on the slide as a powerful reward for using functional communication indicating what she wants. Although we will want to plan for other similar occasions to encourage and support her efforts to speak, asking her to immediately repeat her request will not be beneficial.

How Many Repetitions Should You Do?

In situations where repetition would be helpful, how many opportunities should we create right now? As we noted earlier, you may have observed teachers at school taking data on each trial and arranging for a block of 10 trials. Why 10? It would be nice if research supported that this number is the best number of repetitions to promote learning, but unfortunately, there is no such data. In fact, people tend to use 10 trials so that they can quickly determine the percent correct per block of trials—after all, it's easy to see that 7 out of 10 is 70 percent. However, most of us are not equally adept at immediately seeing that 8 out of 11 trials is about 73 percent. To avoid the more difficult math issue, many people arrange for a block of 10 trials. While this may make some aspects of a teacher's life easier, it is not being done to make the lesson more effective. The prime difficulty for teachers and parents alike is that there is no magic number of repetitions to be used for all lessons involving discrete trials.

Furthermore, at some point in a lesson, continued repetitions may lead to students changing their correct answers. Why would someone stop giving the correct answer? It may have to do with the child's perspective, which may be different than our own. Let me share an observation that we made in a classroom for children with autism. It was 10 o'clock in the morning. On the teacher's list of one-step directions (a type of discrete trial lesson) was the instruction, "Go get your lunchbox." So, the teacher said this to George, who immediately ran across the room,

put his hand on his lunchbox, and turned to smile at the teacher. She smiled back and said, "Good! Come sit down." It is very likely that the teacher thought that her praise was a good reward for George (and in many other situations, it was). When he sat down, the teacher said, "Go get your lunchbox." Again, George zoomed across the room, and smiled while placing his hand on his lunchbox. The teacher smiled and said, "Good. Come here and sit down!" Faithfully, George did as he was told. Once seated, the teacher said, "Go get your lunchbox." This time, George sauntered across the room, put his hand on his lunchbox, and looked at the teacher without smiling. She did smile and said, "Good! Sit over here!" He sat down. You guessed it—she said, "Go get your lunchbox." And George once again slowly walked to his lunchbox.

Although you do not know this teacher, I'm sure you have a good idea of how many times she intended to ask George to get his lunchbox. Right! Her data form had ten boxes and she was planning to run that number of trials. Around trial number seven, when she issued her instruction, George walked across the room and put his hand on a flowerpot sitting on the window sill and looked back at the teacher with a rather inquisitive look. Although we don't profess to be able to read minds, we're sure he was thinking something along the lines of, "Maybe today, *this* is the lunchbox because *that* can't be the lunchbox or she wouldn't keep asking me to get it!"

In other words, George may have focused on getting to eat lunch as the natural reward for getting his lunchbox. Since that did not happen, even though the teacher smiled and praised him, he most likely thought he was not being successful. One strategy that many of us use when learning new skills is called "lose-shift"—if something isn't working, try something else! In this situation, the teacher's repetition was convincing George that something was wrong; his answers were not leading to getting to eat lunch. Therefore, when we want to use repetition to help build up "learning muscles," we want to make sure that the number of repetitions fits the situation.

For example, you may want your daughter to put a napkin next to each plate at dinnertime. Clearly, putting 10 napkins by each plate won't help, nor would setting the table for 10 (unless that's your family size!). On the other hand, you may want your 5-year-old child to sort her socks from those of her 6-foot 5-inch dad's socks. In this case, the number of socks to sort will be related to how many socks you've washed—maybe Dad has 6 pairs and your child has 7 pairs. (When you start this lesson,

you may want to be sure there are only a few socks and only add more as your child becomes more acquainted with the task.)

In short, you need to decide before you start a lesson whether repetition will fit into the situation, and if so, how many meaningful opportunities you want to provide during each occasion. You may need to make adjustments over time—your child may really enjoy the task and you then may want to extend how long it takes to complete the job. On the other hand, your child may not enjoy the task or may become readily bored. If providing additional motivation to complete the task does not seem to be very effective, then you may want to reduce the number of repetitions you are requiring for that job.

How do we ensure enough repetitions for activities that don't naturally seem "repeatable?" For George in the example above, the teacher could use naturally occurring opportunities for repetition by spreading the "Get your lunchbox" direction across the day. The first opportunity occurs just before lunch. The next opportunity could be just after lunch when George needs to retrieve his lunchbox before leaving the cafeteria. Finally, at the end of the day, George's teacher might give the direction once more while George is gathering his belongings to take home. At home, you can create multiple "natural" opportunities for putting napkins on the table by having your son or daughter put out one or two napkins for breakfast, afternoon snack, and dinner.

Sequential Lessons

While there are virtually innumerable discrete trial opportunities, not all lessons in life involve simple, brief actions. Some of what we must learn involves actions that require many steps to be performed in a particular order. For example, you may think of "getting dressed" as a single action, but in fact, getting dressed involves many steps where the order of the steps is important. Not only do children need different actions to put on their socks versus shoes, but they also need to learn to put on their socks before they put on their shoes. We will describe lessons that require many ordered steps as *sequential* to remind ourselves that we are dealing with a sequence of actions to be learned.

There are many sequential lessons in and around the home, and many more to learn in the neighborhood. We also should point out that sequential tasks may change over time—that is, as a child gets older

and acquires more skills, we often make adjustments to what we expect a child (or adult) to do. So, grocery shopping for a 5-year-old will often involve fewer skills than what we would expect of a 15-year-old.

Let's review some common sequential lessons around the home as noted in Table 4-3. You also should consider addressing some of the sequential lessons noted in Table 4-4 that occur in common community locales.

Table 4-3 | Sequential Lessons at Home

Area	Sequential Lesson Activity
Kitchen	Sort silverware while unloading dishwasher
Bedroom	Get dressed
Living Room	Choose, load, and play a video
Dining Room	Set the table
Bathroom	Wash hands
Backyard	Plant seeds

Table 4-4 | Sequential Lessons in the Community

Area	Sequential Lesson Activity
Mall	Order a meal
Grocery Store	Empty shopping cart onto checkout belt
Playground	Build in the sandbox
Neighbor's house	Make a snack
Library	Check out a book
Haircut	Sing the "Haircut" song
Dentist's office	Brush teeth

How Do Communication Goals Relate to the Type of Lesson?

As with any skill, communication goals can either be discrete or sequential. For expressive communication skills (whether involving speech, sign, PECS, or other modalities), examples of discrete lessons would include answering simple questions, such as, "What's your dog's name?"; "What do you want for dinner?"; or "Who is playing in the den?" For receptive communication skills (whether responding to spoken or visually based instructions), examples of discrete lessons would include appropriately responding to "Bring me the hammer," "You can turn on the TV now," and "Give this to your dad."

Examples of sequential lessons involving expressive communication would include responding to "Tell me how to set the table" or "Tell me about your class schedule." Furthermore, getting children to respond in sentences as opposed to single words (via speech, pictures, signs, or otherwise) also involves using chains of responses and are thus sequential lessons. Examples of sequential lessons involving receptive skills include, "Bring me two spoons, and put two plates on the table." "Hang up your coat and then you can go watch TV."

In the next chapter, we will discuss how and when to use prompts when teaching a lesson. All of these considerations apply to communications lessons, just as they do with any other type of lesson. It may be difficult to think about avoiding verbal prompts during communications lessons, especially subtle ones (such as, "Use a whole sentence…") because they do not involve much effort on our part, but they still need to be removed to prevent prompt-dependency from creeping into the situation. (See Chapter 5.)

Designing a Task Analysis

A sequential lesson involves teaching many steps in a set order. Therefore, it is important to note the specific steps and the order in which you expect them to occur. Formally, we would call this a *task analysis* (TA), but it is exactly the same process as writing down the recipe for something we plan to make for dinner. Although I don't always follow a recipe for everything I cook, if I want to make cheese-

cake exactly the way my mother used to make it, then I should follow a specific and detailed recipe. When we want someone to learn to perform a complex, sequential task independently, then we will need to be consistent with the steps and their order.

How can parents design a good task analysis (TA)? When you realize that the skill you want to teach involves a sequence of steps, then you will need to plan out each of those steps. As we've noted before, there are no perfect lessons, so there are no perfect task analyses. There are many effective ways to make a bed (despite what your mother told you!), or to get dressed, or even to open a hard-boiled egg (read *Gulliver's Travels* for more on that!). We suggest you use the following guidelines when you want to design your own TA:

1. Form a little group within your family and talk about how you each perform whatever task you are aiming to teach. Most likely, you will find some variations on how to do any task. Try and come to a reasonable compromise on how best for your child to perform the task. You can think of this as a type of armchair exercise because most of this step will be done by just talking about the activity.
2. Watch how someone performs the task and see how well it matches your written description. Rewrite as necessary to best describe what you see rather than what someone tells you he or she is doing. It may be helpful to watch more than one person perform the task.
3. Talk to your school team (or other families) and see if anyone has written a version of a TA for this activity. You do not have to accept what someone else wrote without considering modifications to fit your child and situation.
4. Consider how your child's skills and age may affect your expectations. For example, you would expect more from a teenager cleaning her room than you would a 4-year-old, so the TAs would be different for each child. If your child can read instructions, then a TA may involve steps that would not be the same as for a child who cannot read.
5. Test out your TA! First, test it on someone other than your child—a friend, perhaps, or a sibling. See if they can read your TA and follow it in the manner you expect.
6. Then try it with your child. That is, watch carefully as you use the TA to teach your child and be prepared to

make modifications. Your child can teach you a lot about how she learns best, so take advantage of her advice!

The steps in your TA are put together much like a chain—each step is like a loop linked to the step before and the step after. In the next chapter we will describe how to use prompts to best teach sequential lessons, and even consider which end of the chain you will want to start teaching.

Now let's consider some common sequential lessons at home and in the neighborhood. At home, the task analysis for washing hands might look like this:

1. Turn on water
2. Adjust temperature
3. Wet hands
4. Dispense soap onto hands
5. Rub hands
6. Rinse hands
7. Turn water off
8. Dry hands

In the community, the task analysis for checking a book out from the library could look like this:

1. Choose book
2. Walk to checkout counter
3. Wait in line
4. Put book on counter
5. Give librarian library card
6. Take book back from librarian
7. Leave checkout line

Before you set out to teach your child the steps you have identified in a task analysis, you will need to decide which step to teach first. This is covered in the next chapter, on Teaching Strategies.

Who Goes First?

When our children are young, we are accustomed to asking—or simply telling—them what to do. We are the ones in charge and set up

situations such as when to set the table, when the TV can be on, when it's time to take a bath, and so on. We often ask many questions, such as "What do you want to drink?"; "Which video do you want to watch?"; "Did you have fun at school today?" or even, "Look at me (so I can wash your dirty face!)." As parents, we are used to taking the lead for our children. But as they get older and more competent, we like to see our children become increasingly independent. When our daughter is 3, we'll happily make her favorite cheese sandwich, but when she's 15, we expect her to be able to make her own sandwich (even if we still have to clean up after her!). Furthermore, even when children are quite young, there are times we would like to see them be spontaneous rather than having to play "20 Questions" to find out what they want.

In other words, we need to strike a balance between teaching our children to follow our directions some of the time and yet be independent at other times. In the next chapter we will describe how we might go about teaching these different styles but for now we want to focus on finding situations in which the different styles are easily identified. When choosing between teaching a lesson that will result in a child being responsive as opposed to spontaneous, it will not matter whether the lesson involves discrete or sequential activities. It also will not matter whether the lesson will involve communication as opposed to physical routines. Each of these can be either responsive or self-initiated.

For example, we could teach a child to set the table (a sequential task) only when we say, "Go set the table." On the other hand, we could aim for the child to learn to set the table at 6:00 P.M., independent of what we've said. Likewise, we could teach a child to turn the TV on (a discrete action) only when we say, "It's time for television" or we could teach her how to turn the TV on whenever she wants to watch a show or video.

When teaching social or communication skills, we need to make similar choices. We can teach a child to say, "Hello" only when we say hello first, or we can teach the child to initiate the social greeting when entering a room. Our point is that you must decide before you start the lesson what you want the child to do:

1. respond to something you've said or done, or
2. initiate the act following something going on inside of her (e.g., she's hungry) or something around her (e.g., she sees a friend she wants to play with).

It would be nice for us as teachers and parents to be able to teach children to respond to us now and to become more spontaneous on their own later on. Unfortunately, this rarely happens—children with autism tend to become more independent and spontaneous only when we teach (and thus support) them for doing so. Therefore, when you are initially planning a lesson, it is wise to think ahead about not only how you will teach your child to do the skill on your instruction, but also how you will later get her to do it more independently. Many of these issues relate to how to use and phase out prompts, which is discussed in the next chapter.

Building and Taking Advantage of Routines

If you want to learn to teach your child needed skills during the course of everyday life, you will naturally need to learn how to embed teaching in your daily routines. If you need to do a routine anyway, and if one of the steps of the routine involves your child, then whenever you do the routine you will automatically be teaching your child. We can teach any kind of skill in the course of performing a routine, but we will illustrate how to do this with communication skills because all children with autism have needs in this area.

Parents typically understand the advantages of helping their children expand their communication repertoires—both in terms of the total number of words in their vocabulary and in the complexity of their sentence constructions. Parents often observe teachers and speech-language pathologists teaching lessons at school where they try to increase a student's vocabulary by introducing novel items either directly or via pictures. During some of these lessons, a teacher may show the student many common objects, including items that are familiar to the child as well as a few new items around which the lesson is built. For example, we could place a fork, knife, and a spoon before the student and ask her to name each one. Then we could show her a can opener and teach her the name of that item. In this way, the new item is embedded within a relatively easy task. Hopefully, when the child next sees a can opener at home, she will be able to recall the name learned at school. Sometimes, this lesson is arranged using pictures or photographs of both the familiar as well as the novel items.

Keeping with our theme that parents can arrange for successful lessons at home without changing their home into a classroom, let us consider some strategies that we can use at home to help children increase their vocabularies. Our key suggestion involves designing activities and routines to help the child understand the functional value of increasing her vocabulary.

Let's consider this goal with the can opener. Although it is possible to teach a child the name of something and then later learn the use of that object, it is often more effective to first teach the functional use of the item before designing a communication lesson associated with that item. So, at home, we would first create an activity during which a can opener will be helpful. Let's assume that your daughter likes soup and that there are some canned soups that she enjoys. Rather than simply preparing the soup for her—that is, serving hot soup in a bowl—we will first teach her the routine associated with opening the can before preparing the soup. Even children who are too young to manipulate the can opener themselves can learn this routine.

To design an effective routine, we first need to think about the steps that make up the routine. Look at the list below for an example of a task analysis for preparing canned hot soup:

1. Get a bowl
2. Get a spoon
3. Get the can of soup
4. Get the can opener
5. Open the can of soup with the can opener
6. Pour the soup into the bowl
7. Place the lid into the empty can and throw in garbage
8. Put bowl in microwave
9. Turn on microwave for 1 minute
10. Take out bowl and put on table
11. Eat soup with spoon
12. When finished with soup, put bowl and spoon in sink

We hope you can see that this is only *one* way to prepare canned soup! For our example, it is important to note where the can opener will be used—in step 5. When we first begin this lesson, we should not expect the child to actively participate in any single part of the routine. That is, we expect to guide the child throughout the routine. For this kind of activity, which involves many physical actions, we suggest using direct

physical assistance. We will eventually have to remove our guidance (see the discussion about getting rid of teaching prompts in Chapter 5). Therefore, we do not want to use many different types of prompts at this point. So, once we announce the general activity ("OK, let's make soup!") in some manner, we would help the child get each of the items we need for the routine. When we have all the items, then we would guide the child to pick up the can opener and place it on the soup can.

Again, whether our aim is to teach the child to independently open the can will be a function of the child's age and skill level. However, our immediate goal is to teach the child to pick up the can opener to begin Step 5. Over several opportunities to make soup, we try to gradually remove our help until the child is automatically picking up the can opener when it is time to use it. Of course, we hope that you will remember to heap great praise upon your child when you see her acquiring that skill! After a few successful opportunities with this step in place, we are ready to create our communication lesson.

During the next soup-making opportunity, you put the can opener somewhere that your child cannot reach it by herself. Essentially, you place yourself between the child and the completion of the next step. That intervention creates the need for your child to communicate with you in order to complete the routine that she has previously learned. If you tried this arrangement on the very first day of this lesson, she would have no reason to ask for the can opener since she has no idea why she should want it. And, it is not enough to just teach the name of something—we must create the need for communication.

One way to help identify functional vocabulary is to fill out a form like the one shown in Table 4-5.

Note from the table above that you can teach a variety of vocabulary words by varying which item is missing when your child wants to make soup. On some days the can opener is missing and on some days the bowl is missing. In order to balance your child's opportunities for being independent at making soup with her opportunities to learn to communicate while making soup, remember that on some days, no items should be missing.

Review

This chapter introduced the Pyramid Approach to designing effective lessons in various environments. Not all lessons are alike. Some

Table 4-5 | Vocabulary within Routines Form

Routine: Making canned soup

Steps	Vocabulary for Requesting
1. Get a bowl	1. bowl
2. Get a spoon	2. spoon
3. Get the can of soup	3. soup
4. Get the can opener	4. can opener
5. Open the can of soup with the can opener	
6. Pour the soup into the bowl	
7. Place the lid into the empty can and throw can in garbage	7. garbage can
8. Put bowl in microwave	
9. Turn on microwave for 1 minute	9. help
10. Take out bowl and put on table	
11. Eat soup with spoon	
12. When finished, put bowl and spoon in sink	

Reinforcement for completing routine: Getting to eat soup!

are relatively simple and require a single action—these lessons can be described as discrete. Other lessons involve many steps in a particular order—these are sequential lessons. For lessons involving many steps, it will be helpful to write out the task analysis you think will be effective for your child. For either type of lesson, you must consider how to incorporate repetition to promote success but not undermine the power of naturally occurring rewards. Furthermore, you must also consider whether you want the lesson to begin with your action or be initiated by your child. Each decision you make regarding the type of lesson you want your child to learn will affect how you will go about teaching that lesson—the topic of our next chapter.