# Teaching Routines

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 We’ve learned how to teach classroom behavior, classes/concepts and their names, facts, and rule relationships. Now we’ll teach routines (things with steps) such as motor tasks, reading stories, science, solving math problems, and more.

 This document shows

* Six effective formats for teaching routines.
* How to choose the best format depending on the routine (for instance, the number of steps), and students’ strengths.
* What to do if a format is not working with some students.

By the end of this chapter, readers will know what great teachers and instructional designers know.

 So, What Are Routines?

 Routines are sequences of steps, phases, or stages.

*Some routines are in Nature*.

* Mitosis. How somatic cells duplicate themselves---interphase, prophase, anaphase, metaphase, telophase.
* Changes in deciduous trees through the seasons.
* Changes in water, called the hydrologic cycle.

*Some routines are in human activities.* These are called tasks, problems, chores, and cycles. For example,

* Reading sentences. Steps: focus on the first word; focus on the first letter of that word; say the sound that goes with the first letter; scan to the right and say the sound of the next letter; continue.
* Putting on a knit cap. Think of the steps, from picking up the cap to pulling it down around your ears.
* Solving for x in problems such as 2x + 56 = 60
* Doing inquiry 🡪discovery (knowledge-construction) projects in the Spooky Swamp ecosystem: scanning, focusing, identifying, describing, organizing and communicating knowledge acquired (knowledge of classes of things in the swamp, facts, rule relationships, cycles), and asking more questions.

Okay, now we’re ready to go.

Formats for Teaching Routines

 We’ll learn six ways (formats) to teach students to integrate behavior steps into fluent sequences, or routines. Formats are sometimes called *chains*, as in a chain of steps. Which format we use depends on *how many* *steps* there are; how many *knowledge elements* are used in the steps; and *how firm* students are on the elements. If one format doesn’t work well, we switch to another that is more scaffolded. The formats’ names may be a bit confusing, but by the end of this and next chapters (lessons) the Reader will say, “Pretty simple!”

Planning To Teach a Routine

 Here are the steps.

1. *Identify the routine* in human *behavior* (for instance, decoding words); in *text* (for instance, paragraph 2 of the *Declaration of Independence* is a series of rule statements making the case that the Colonies have the right of revolution); or in Nature (the phases of the rock cycle).

2. Do a *task/knowledge analysis* of the routine. For example,

* What are the steps in solving equations such as 2 x + 7 = 19?
* What knowledge elements are used to do each step: *concepts* (variable, constant, operator, equals) and *operations* (subtraction and division)?

We display task/knowledge analyses like this.

 Steps, Phases Elements Needed for Each Step or Phase

3. *Assess students’ knowledge* *of the steps and elements*.

4. *Pre-teach needed elements, and then review and firm* these before teaching the routine.

5. The assessment suggests where students may have difficulty. “Bella is not firm on step 1, reading the equation.” So, we

* *Practice* weak steps and elements using MLTV.
* Prepare to *pre-correct* errors using add-ons---reminders, hints, written lists of steps.
* *Correct errors* or *firm* weak parts—chapters 7 and 8.

6. *Then we select what looks to be an effective format*. We use a more scaffolded format when routines have lots of steps and knowledge elements, and/or when students have learning difficulties. Err on the side of caution. Here is a quick summary of formats.

<Insert table14.1 near here.>

Table 14.1. Summary of Formats

1. *Whole Routine, or Total Task.* Teach kindergartners to point to and count five objects.

 Model-Lead-Test/check/Verify all of the steps (pointing to and naming numerals) *at once*.

Repeat to firm up the steps and the sequence. Go faster to build fluency.

1. *Forward Chaining: Straight version.* Teach first graders five facts about their city.

MLTV step/fact 1. Then step/fact 2. Then step/fact 3; etc.

Practice (MLTV) the whole routine (recite all of the facts) to firm up the whole sequence. Go faster to build fluency.

3. *Forward Chaining: Cumulative version.* Useful when routines have many steps, and each step uses a lot of background knowledge elements (long division). The repetition of earlier steps aids recall and firms up the sequence.

Teach (MLTV) step 1. Then teach step 2.

Then do steps 1 and 2.

Then teach step 3.

Then do steps 1-3; etc.

Then practice the whole routine (MLTV) to firm it up. Go faster to build fluency.

4. *Partial Total Cyle (Chunking).* When a routine has many steps and knowledge elements, we might break the sequence into chunks of 2 or 3 steps; use MLTV to teach each chunk; and then use MLTV to help students to integrate all of the chunks. For example, memorizing a poem.

5. *Backward Chaining.* Making a bed or assembling science equipment.

 Model and tell how to do all the steps. Students do the last one.

 Next, model and tell how to do the steps. Students do the last two.

 Continue until students start with step 1.

 Practice all the steps in sequence. Go faster.

5. *Sequence of four formats.* This is adapted from the series of formats used by Engelmann,

Haddox, & Brunner (1986). From a lot to minimal scaffolding.

Format 1. Model and tell how to do each step (decoding words, math problems); students watch and follow along. Do several examples until students are firm.

Format 2. Tell students what to do in each step; students repeat (tell you) what they’ll do; students do each step with several examples until firm.

Format 3. Students tell the teacher what they will do in each step, and then they do each one. Do several examples until students are firm.

Format 4. Students do the whole routine more independently, but with help (add-ons) as needed. Practice, and go faster, to build accuracy and speed.

Okay, let use the formats!

Using the Whole Routine (Total Task) Format

Identifying Parts of Mountains with the Whole Routine (Total Task) Format

 Mr. Templar (chapter 11) introduces students to the geological formation, mountains. He wants them quickly to identify defining features. Here is his task/knowledge analysis.

<Insert table 14.2 near here.>

Table 14.2. Knowledge Analysis of Describing Mountains

Steps Knowledge Elements Needed

 Learning Readiness:

Sits tall; watches and listens; takes turns; tracks teacher’s finger as he points; points to features on visual example.

Concepts/names:

Says, reads, defines mountain, surrounding land, slope, steepness, peak, glacier, tree line, erosion, debris.

1. Teacher models pointing to and 1. Listens and watches; tracks teacher’s finger as he

 naming features of mountain points; repeats the names of the features.

2. Class points to and names 2. Listens and watches; points to and names features

 features together. along with teacher.

3. Students point to and name 3. Scans mountain; focuses on features; points to

 features. features and says the name.

Now Mr. Templar begins instruction.

<Insert table 14.3 near here.>

Table 14.3. Learning to Describe Mountains with the Whole Routine (Total Task) Format

*Gain attention*. “Everyone get ready to learn… Okay, ready to go!”

*Frame instruction*. “Now we’ll learn the features that define the class/concept, mountains.”

Mr. T. shows an example of a mountain, points to each feature, and says,

*Model.* “Slope… angle… Another slope—a steep slope angle. Peaks---the top. Two peaks… Tree line---no trees above this line. Too cold and windy… Glacier---deeply packed ice and snow… heavy… Crevasse—deep cleft or cut in the rock…. Debris---eroded rock piled up at the base.”

*Lead.* “Let’s point and name the features together…..” [Your turn. What does the class do now?]

*Test/check.* “Now you point and name the features…. Go!” [Your turn. What do the students do?]

*Error correction.* When Mr. Templar, hears or sees an error, he immediately corrects it. “That’s a crevasse… What is it?”… *crevasse…* “Yes, crevasse. A deep cut or cleft. Now you got it.”

*Build fluency.* “Let’s go fast. First time, I’ll point and you name the features. Second time, you point and name the features. See if we can do them all in 15 seconds… Get ready….”

Next!

Saying Letter-sounds with the Whole Routine (Total Task) Format

 Saying letter-sounds is a short routine. Here is Ms. Renard’s task/knowledge analysis.

<Insert table 14.4 near here.>

Table 14.4. Knowledge Analysis of Learning Letter-sounds

Steps Knowledge Elements Needed

 Learning Readiness:

Sits tall; watches and listens; takes turns; tracks teacher’s finger as she points.

Verbal imitation. Say sounds.

1. Teacher models touching under 1. Watches and listens. Tracks teacher’s finger.

 r and saying rrr. Model.

2. Class says rrr when teacher 2. Watches and listens. Tracks teacher’s finger. Says

 touches under the letter. Lead. rrr.

3. Class points to letter and says 3. Focuses on letter; points to letter and tracks finger;

 rrr. Test/check. touches under the letter and says rrr.

Here’s how Ms. Renard teaches r says rrr.

<Insert table 14.5 near here.>

Table 14.5. Teaching Letter-sounds with the Whole Routine (Total Task) Format

*Gain attention and frame instruction.* “All my angels sitting tall ready to learn a new letter-sound. Remember we *follow* my finger; we *look* right at the letter when I touch under; we *listen* when I say the sound.”

*Model.* “When I touch under the letter, I will say its sound…. rrrrr…. Again, rrr.”

*Lead.* “Now, when I touch under the letter, we’ll say the sound to *together*… Follow my finger…” *rrrr…* “Again.”… *rrrr.*

*Test/check.* “Your turn. When I touch under this letter, you say the sound… Follow my finger…”
*rrrr.* “Again.”… *rrrr.*

“Your turn again. Now *you* touch under this letter and say the sound.”

*rrrr.*

*Verification.* “Yes, rrr. You touched under the letter and said its sound all by yourselves!”

 Here’s our second format.

Teaching Simple Tasks with Forward Chaining: Straight Version

 This format can be used to teach simple tasks at any grade level. We use MLTV with each step; then gradually fade out the Model and Lead portions as students do *each step*, and then they do *the whole sequence* on their own. Here are examples.

Counting Groups with Forward Chaining: Straight Version

 Mr. Smithers’s students will soon be learning the routine of simple addition. 3 + 2 + 5 =. Simple addition integrates four skill elements. Students have already learned three: (1) the connection between quantities (////) and numerals/names (4, four); (2) rote forward counting (“one, two, three, four…”); and forward counting objects (one chicken, two chickens, three chickens, four chickens). Now, he’ll teach the fourth element of simple addition: forward counting groups of objects. 3 chickens, plus 5 more chickens, plus 4 more chickens. He plans instruction with a task/knowledge analysis.

<insert table 14.6 near here.>

Table 14.6. Knowledge Analysis of Group Counting

Steps Knowledge Elements Used

 Learning Readiness Skills:

 Sit tall, wait and take turns, follow instructions, point.

 Speech:

 Say words.

1. Count Group 1. 1a. Connect quantities (///) and numerals/words (3, three).

 3 objects 1b. Rote count forward by ones.

 1c. Count objects by ones.

 1d. Start counting with “one.”

2. Count group 2. 2a. Connect quantities (///) and numerals/words (3, three).

 5 objects 2b. Rote count forward by ones.

 2c. Count objects by ones.

 2d. Start counting with the next numeral (4) after the last one (3).

3. Count group 3. 3a. Connect quantities (///) and numerals/words (3, three).

 4 objects 3b. Rote count forward by ones.

 3c. Count objects by ones.

 3d. Start counting with the next numeral (9) after the last one (8).

4. Say the total number. 4a. Say the last number counted: twelve.

 Here is how the class does it. Notice the add-ons--hints, recall checks, and reminders; also notice how students do the routine more and more on their own at each step.

<Insert table 14.7 near here.>

Table 14.7. Teaching Group Counting with Forward Chaining: Straight Version

*MLTV count group 1*. Mr. Smithers and the class point to the group and then to *each* chicken.

They say, “One chicken, two chickens, three chickens… Yes, this group has three chickens.”

*MLTV count group 2.* “We have three chickens… How many chickens?”... *three.* “Yes, three. So, start counting group 2 with four! What do we start counting group 2 with?... *four…* “Yup, start counting group 2 with four…Point to each chicken…. Go.” *four, five, six, seven, eight!...* So, how many chicken in groups 1 and 2 now?... *eight chickens…* “You guys are so smart. These chickens can’t fool you….

*MLTV count group 3.* “What do we count next?”... *group 3.* How many chickens do we have so far?”... *eight…* “So, what do we start counting group 3 with?... What comes after eight?”... *nine!* “So, what do we start counting group 3 with?:... *Nine!...* “Do it…” *Nine, ten, eleven, twelve…* “How many chicken in *all three* groups?... What is the last number you counted?”... *twelve…* “So, how many chickens do we have?”… *twelve. twelve cluckers… twelve fryers… I’m hungry.*

*MLTV count all three groups.* “Okay, your big turn. Count all three groups. Point to each chicken in Group 1 and say its number. Go to Group 2 and keep counting where you left off.… Go to the Group 3 and keep counting where you left off. Ready?”

*You bet.*

“Go!”

*One, two, three… four, five, six, seven, eight… nine, ten, eleven, twelve cluckers.*

“You counted all three groups. You are smart clucker counters.”

Next example!

Teaching Small Motor Tasks with Forward Chaining: Straight Version

 Maria Leon has a kindergarten class of economically and educationally disadvantaged kindergartners. Some have learning difficulties and some are new to this country. Ms. Leon is teaching simple motor tasks such as working puzzles, drawing with crayons, getting and putting away materials, wiping off tables and counters. Her students learn more than just muscle movements They learn to name actions, objects, and steps; to tell the steps (“Now slide the bunny.”); to make choices (“Which place for the horse?”); and to try again. They will generalize this knowledge to others tasks.

 Ms. Leon does a knowledge analysis of the routine.

<Table 14.8 near here.>

Table 14.8. Knowledge Analysis of Doing Three-Piece Puzzles Having a Separate Space for Each Piece.

For all steps:
Learning Readiness Skills:

a. Student “shows ready”: sits, looks at Teacher, is quiet, waits her turn.

b. Student cooperates with requests: look, point, take, pick up, hold, slide.
c. Student imitates movements: picking up, holding, sliding, putting in.

d. Student tracks objects that Teacher points to, holds up, or moves.
e. Student takes her turn when Teacher gives instructions/signals.

Small Motor Skills:

Reach, grasp, pick up, move arm, open fingers to release, visually track.

Verbal Imitation: Say bunny, kitten, horse, in, slide, wiggle, pick up, look.

1. Reach for object. 1a. Teacher names object. Student looks at object. [Point as a prompt.]

1b. Teacher says, “Take bunny” and point-touches.

 Student extends (straightens) arm at elbow. [Physical prompt if needed.]

1c. Teacher continues pointing. Student visually tracks own hand.

2. Pick up object. 2a. Teacher points-touches object and says, “Pick up bunny.”
 Student stops moving arm when hand is over or next to the object.
 [Physical prompt if needed.]
2b. Student opens fingers.

2b. Finger tips close onto object (pincer grip). [Physical prompt.]

3. Move object to spot. 3a. Student looks at spot on puzzle board. [Point-touch prompt plus “Here”.]

3b. Student lifts arm at the shoulder and elbow---to pick up the object.
 [Physical prompt.]

3c. Student extends (straightens) arm towards spot. [Physical prompt. Move
 puzzle closer if needed.]

3d. Student watches (visually tracks) hand as it moves towards the spot.

4. Put object near spot. 4a. Teacher says, “Here” and physically prompts student to put piece down
 on the puzzle board near the spot.

 Student stops arm when hand with object is near the spot.

4b. Lowers arm at shoulder and elbow.

4c. Lowers hand so that puzzle piece is flat on the puzzle board near the
 spot. [Physical prompt if needed.]

5. Slide piece into slot. 5a. Teacher says, “Put in.” Student slides puzzle piece over the slot.
 [Physical prompt to help the piece fit in. As piece snaps in place, Teacher
 says “Yes, in!”] Student releases object.

6. Repeat with remaining

 pieces.

Ms. Leon and students have the same three-piece puzzle in front of them as they do the first puzzle.

<Insert Table 14.9 near here.>

Table 14.9. Teaching Three-Piece Puzzles with Forward Chaining: Straight Version

*Gain attention and frame instruction.* “Nice and quiet… Sitting tall…. Looking and listening… Yes, all ready! Now we’ll learn to work puzzles with baby animals. We’ll learn the *names* of our animals, and how to put our babies in their special *places*.” [Ms. L. points to the pieces and to where they go. “Horse *place* here.”] [Consistent wording---“place.”]

*Model-Lead-Test/check-Verify naming pieces and showing their places (pre-skills)*

Ms. Leon by *herself*; then Ms. L. and students *together*; and then students *alone* *point* to and *pick up* each piece; *name* each piece; and *point* to its place, while *telling* each step in this little sequence.

“See, this place *looks* like the bunny. So, bunny goes here.”

*Model-Lead-Test/check-Verification putting in each piece (Forward chaining: Straight version)*

Ms. Leon by *herself*; then Ms. L. and students *together*; and then students *alone* *point* to and *pick up* each piece; *name* each piece; and *point* to its place; *slide* the piece towards its place; *wiggle* the piece over the place until it goes in; and *confirm* that the piece fits (for instance, “Bunny in.”).

Ms. Leon and students *prompt/cue* themselves by *telling* what they are doing: “Pick up.” “Say name…kitten.” “Look for kitten place.” “Slide to kitten place.” “Wiggle kitten in place.” “Kitten in place.”

*Test/check. The group does all three pieces---integrating steps into the whole routine.*

Ms. Leon and students dump out all of the pieces and put them face up. Students have seen and done the movements for fitting three pieces. Ms. Leon does not use the model or lead this time.

“Your turn to do the *whole* puzzle.” [Ms. Leon give a minimal prompt to get students *started*. She fades out cues-prompts (“Pick up a piece.” “Name the piece.” “Point to its place.” “Slide.” “Wiggle.” “It’s in!”) as students do the next steps on their own. She praises and verifies as students do the steps. “Yes, you said ‘look for’ and you looked for and found the bunny place.”

 The Reader might say, “That’s a lot of scaffolding just to do puzzles.” Yes, it is. We want to ensure that students get it right the first time because every error becomes another *way* to do it. However, as students become fluent, the teacher *uses less scaffolding*.

Here is the next format.

Using the Forward Chaining: Cumulative Version

 Here are examples of this fine format.

Teaching Students to Memorize Lines with Forward Chaining: Cumulative Version

 Middle school English teacher, Bernice Wooster, wants students to memorize a poem by Lord Byron. Simple. She has students (chorus or independently) read line one until they have it memorized. Then line two. Then lines one and two. Then line three. Then lines one-three. And so on. This way, *students more easily recall earlier lines*. 30 years later they will remember the poem---and Ms. Wooster!

So We'll Go No More a Roving

So, we'll go no more a roving

   So late into the night,

Though the heart be still as loving,

   And the moon be still as bright.

For the sword outwears its sheath,

    And the soul wears out the breast,

And the heart must pause to breathe,

   And love itself have rest.

Though the night was made for loving,

   And the day returns too soon,

Yet we'll go no more a roving

   By the light of the moon.

[George Gordon Lord Byron, written in 1830.]

Teaching Students the Rights Protected by Amendments 1-6 with Forward Chaining: Cumulative Version

 Justin Story’s students will learn the main rights (below) protected by Amendments 1-6 of the U.S. Constitution the same way that Ms. Wooster’s students learned Lord Byron’s poem—in chunks. <https://www.law.cornell.edu/constitution/billofrights>

Amendment 1. Religion, Speech, Press, Assembly, Petition congress.

Amendment 2. Keep and bear arms.

Amendment 3. No quartering (private lodging) of soldiers.

Amendment 4. Protection from searches and seizures.

Amendment 5. Right to grand jury, protection from double jeopardy and self-incrimination, and right of due process.

Amendment 6. In criminal prosecutions, rights to impartial jury trial without unnecessary delay, counsel, and to know accusers.

 After studying each amendment, students recite the main protections in sequence.

Amendment 1; then Amendment 2; then Amendments 1 and 2; then Amendment 3; then Amendments 1-3; and so on. The result is that students look and feel smart, and will always remember the Amendments.

Teaching Math Routines with Forward Chaining: Cumulative Version

 To help students remember the steps in math routines, Ms. Gardner provides worked examples as models. The class uses the forward chaining, cumulative format to practice the written steps.

 4 2 Steps.

 x 1 2 1. Read problem.

 8 4 2. Multiply 2 and 2. Write product: 4.

 41 2 3. Multiply 2 and 4. Write product: 8.

 5 0 4 4. Multiply 1 and 2. Write product--2.

 5. Multiply 1 and 4. Write product--4.

 6. Bring down and write 4.

 7. Add 8 and 2. Write 0, carry 1 (for 10). Put 1 over 4.

 8. Add the 1 (ten) to 4. Write sum—5.

 9. Read problem with solution.

The class does step 1 till firm; then step 2 till firm; then steps 1 and 2 till firm; then step 3; then steps 1-3 till firm; the step 4 till form; then steps 1-4 till firm; etc.

This way, students recall the earlier steps, make few errors, feel confident, and use this format in other routines.

Here is our third fine format.

Using the Backward Chaining Format

 Occupational therapist Bonnie MacKenzie is teaching fifth grader, Bobby Greenlow, who is recovering from brain surgery, to feed himself soft foods with a spoon. The operation left Bobby with muscle weakness and less control of movements. Ms. Mac. says, “Knowledge analysis tells me the steps and knowledge elements of self-feeding.”

<Table 14.10 near here.>

Table 14.10. Knowledge Analysis of Self-Feeding Soft Foods with a Spoon

Table 14.10. Knowledge Analysis of Self-Feeding Soft Foods with a Spoon

Steps Knowledge element needed

 Learning Readiness. Applies to all steps.

 Sits in a comfortable, supported position; makes eye contact;

visually tracks movements of Teacher’s hand, his own hand, and; cooperates with requests, such as “Look at…,” “Open.”

Words/concepts: open, look at, lift, hold, spoon, reach, bowl, bite, fingers. (Bobby’s receptive language was weakened by the surgery.)

Grasp spoon with fingers and palm. 1a. Scan the table-top and focus on the spoon held by Ms. Mac.
(Palmer grip at first.) 1b. Track as she moves the spoon to Bobby’s hand. 1c. Listen as she says, “Here comes your spoon.”

 1d. Focus as she holds his hand and opens his fingers.

 1e. Listen as she says, “Open fingers” “Close fingers. Hold.”

2. Move spoon towards the bowl. 2. Listen as Ms. M. says, “Arm up.” Raise arm at the
 shoulder.

3. Aim spoon at the bowl of ice 3a. Listen as Ms. Mac. says, “Reach arm to bowl.”

 cream. 3b. Flex muscles at the shoulder; extend arm. Track movement to
 bowl.

1. Dig into the ice cream to load 4a. Listen as Ms. Mac. says, “Dip spoon.”

 spoon. 4b. Rotate wrist to the left (inward) so that spoon angles
 downward and aims at the ice cream in the bowl.

 4c. Push spoon into ice cream. Track movement of spoon.

1. Lift loaded spoon from the 5. Listen as Ms. Mac. says, “Lift.” Rotate wrist outwards.
 bowl. Visually track spoon.
2. Bring spoon to mouth. 6a. Listen as Ms. Mac. says, “Move spoon to mouth.”

 6b. Flex muscles of lower arm to bend arm inward at the
 elbow. Visually track movement of spoon.

 6c. Listen as Ms. Mac. says, “Here’s the ice cream. Open
 mouth, Sweetie.” Moves spoon into mouth.

1. Eat ice cream off of spoon. 7a. Listen as Ms. Mac. says, “Bite ice cream.” Closes lips
 around spoon. Feels ice cream with tongue.
2. Spoon out of mouth. 8. Extend arm at the elbow to move spoon out of mouth.
 Listen as Ms. Mac. asks, “More ice cream?” Say, “Yup.
 More!”

*Your turn.* Would the reader add any steps or knowledge elements?

 Ms. Mac uses the knowledge analysis to plan instruction. She says, *“I won’t use the Whole Routine, Total Task* format (MLTV all the steps at once) because this routine has *too many* *steps*, and many *knowledge elements* in each step—that use more *muscular coordination* *and strength* than Bobby has at this time. I don’t want him to feel, ‘I can’t do it. I’ll never do it!’”

 In contrast, *Backward chaining* (starting with the last step---ice cream in the mouth) keeps Bobby close to successful completion (positive reinforcement). He will handle doing more and more steps himself because he has *practiced each next step* so often, and he always gets the ice cream, or mashed potatoes, or cherry yogurt.

 So, Ms. Mac

1. *Teaches and firms up many of the knowledge elements* (Learning Readiness, movements, and names/concepts) *before she works on self-feeding.*
2. *She reviews and firm elements* right before each session.
3. *She uses extra scaffolding* (chapter 7) such as helping Bobby to raise his arm at the shoulder, closing his fingers around objects, moving his arm to reach; praising as he does each step; and giving reminders (“Hold tight!”).

Here is how Ms. Mac. teaches the routine with backward chaining.

<Table 14.11 near here.>

Table 14.11. Teaching the Routine of Self-feeding with a Spoon Using the Backward Chaining Format.

This will take several days at least. However, the movements transfer to other routines, such as using a fork; and reaching for, grasping, holding, and moving objects.

1. *Gain attention and frame the task.* “Okay, Sweetie. Let’s eat some ice cream. Ready?”

Bobby nods and says, “Yah.” “Okay, I’ll show you how. Watch and listen.”

1. Ms. Mac. demonstrates and names all of the steps. She has Bobby do the last one. Ms. Mac.
2. Shows Bobby how she holds the spoon. “Close fingers. Hold spoon.”
3. Raises her arm. “Arm up.”
4. Moves spoon to the bowl. “Reach arm to bowl.”
5. Rotates her wrist and lowers spoon into the bowl. “Dip spoon.”
6. Scoops a small amount onto the tip of the spoon. “Scoop.”
7. Lifts spoon out of the bowl. “Lift.”
8. Moves the spoon back toward Bobby’s mouth. “Move spoon to mouth.”
9. Bobby opens his mouth and takes food off of the spoon.
i. Bobby swallows the ice cream. “Let’s do more,”

They repeat several times, until Bobby is firm on the *few last movements* (h.-i.) in the routine.

1. Ms. Mac. demonstrates and names all the steps again, up to f. Ms. Mac. closes Bobby’s hand around the loaded spoon and says, “Hold spoon…. Close fingers…. Lift.”

She says, “Move spoon to mouth” (movement g.), and helps Bobby bring the spoon to his mouth.

Then she and Bobby do movements h. and i.

They repeat this several times, until Bobby is firm on doing the few movements.

1. Ms. Mac. demonstrates and names all the steps. This time she backs up yet another step, to e.

She closes Bobby’s hand around the spoon and says, “Hold spoon… Close fingers.” She says, “Lift,” and she helps Bobby to lift the loaded spoon from the bowl and prepare to bring it to his mouth.

Then she and Bobby do movements f., g., h., i., j.

5. They continue backward chaining. By the end of the week, Bobby is doing all of the steps by himself, with a little help.

 Bobby and Ms. Mac. show his family how much he is learning. The family uses Ms. Mac.’s
routine at home. Bobby generalizes the steps and knowledge elements in the self-feeding routine in other tasks. Bobby and his family are proud of his progress.

Here is our next fine format.

Using the Partial Total Cycle (Chunking) Format

 Here are two examples of this format.

Teaching students to Read Multi-syllabic Words with the Partial Total Cycle (Chunking) Format

 Mr. Stone’s students are firm with one- and two-syllable words. Now they are working on longer words. He has been using Total Cycle Programing (MLTV all of the steps at once) to teach multi-syllabic words such as preparatory, incineration, and particularistic. Some students hesitate and stumble. There are too many syllable steps at once. So, he switches to chunking. He

* Uses MLTV with each word part.

“First we’ll sound out each word part and read it fast.”

MLTV (I do; We do; You do) pre; MLTV par; MLTV a; MLTV tion.

* Then he teaches students to integrate (read the whole sequence of) chunks.

MLTV pre/par/a/tion.

* They repeat until students are fluent.
* After an acquisition set of 10 words or so, students know how to sound out each part, and then to read all of the parts on their own.

Teaching Students to Read Text in Chunks

 Ms. Feinstein’s history students are reading texts that are packed with facts and rule statements. There is no way they can comprehend what the texts say if they read one paragraph at a time straight through; that is, the whole routine, or total task format. So, Ms. Feinstein uses chunking.

For example, students read and analyze (take apart) historical speeches and papers one line-chunk at a time.

* To make sure they are accurate, the class sounds out new words and then reads the fast---oligarchy, quintessential, gubernatorial.
* Then the class reads a line. They decide if it is a definition of a *concept* (“The militia consists of all able-bodied adult men.”); a *fact* (“This Constitution gives too much power to the federal government.”); *category rule* (“Democracies are among the worst forms of government.”); a *when-then causal rule* (“When the people have well-regulated state militias, they can fight against a tyrannical federal government.”), or a *routine* (such as the sequence of historical events leading to a revolution).
* The class makes a table of the knowledge they are gaining from the text.
* Then they summarize what they have learned.

For example,

<insert table 14.12 near here.>

Table 14.12. Knowledge Analysis of Samuel Adams Speech about the Declaration of Independence

<http://www.samuel-adams-heritage.com/documents/speech-about-declaration-of-independence.html>

Concepts/names. arsenal, sanguine, infidels, imperial….

Facts and descriptions: We have large armies…. Our armies are well disciplined…. Our commanders are inferior to none…. Foreign nations are waiting to crown our success by their alliances.

Rule relationships. Our force and resistance (to British rule) will lead to “glorious independence.”

Routines: statements that amount to a theory, or explanation, or time line. “Our union is now complete” 🡪 “Our constitution (is) composed” 🡪 “established” 🡪 “and approved” 🡪 And now we are “the guardians of our own liberties.”

 Teachers can do the same thing with younger students. For instance,

* Students learn how to sound out (for accuracy) and read quickly (for fluency and confidence) As students become more skilled, the teacher removes the Model and Lead portion, and students read independently.
* Students read two, three, and four sentences (larger chunks) at a time.

Here is our last method.

Ms. Flynn Uses a Sequence of Four Formats

 This method, adapted from a highly effective program (Engelmann,Haddox, & Brunner (1986), seems to work when the above formats do not. Why?

* The sequence of formats moves from the teacher models and tells all steps in the routine (format 1), to students doing all the steps independently (format 4).
* In formats 2 and 3, students tell the teacher and themselves what steps they will do
* This way, students (especially students who have had a difficult time with complex routines) learn a routine without fear of failure.
* Students repeatedly telling the teacher and themselves the steps as they do the routine nearly ensures recall of what to do next.

In Chapter 16, Ms. Flynn uses a sequence of four formats to teach decoding.

What if Students Are Not Learning?

 If the class, a small group, or even one student is not “getting it,” even though we try the same format again and again, it may mean that (1) students’ Learning Readiness skills (focused attention, taking turns) are weak (in which case, no format will work); and/or (2) there is not enough scaffolding added to the communication (such as hints and error correction); and/or (3) the format we are using does not have enough scaffolding. What do we do? Four things.

1. Stop using the ineffective format. Instead,
2. Practice weak Learning Readiness skills---paying attention, waiting and taking turns, responding quickly to requests. During lessons, reinforce even small improvements quickly. “I love how you are all showing ready to learn.”
3. Add scaffolding (See chapter 7) to make communications clearer; for example,
* Brisk pace to sustain engagement.
* Reminders. “Remember, + means add.”
* Consistent wording. “This letter makes the sound…” “This letter’s sound is…” “When you see this letter, we say the sound….” “What sound goes with this letter?”
* Lots of reinforcement for engagement and effort. “I love the way you wait your turn and respond fast when I give the Go signal!”
* Pointing and other highlighting to focus attention.
* Instructions. “Read the problem first.”
* Think time. “What is the definition of crystal?... Think.” “Your turn to sound out these words… Get ready… Go.”
* Pre-corrections. “Don’t let that word fool you. The a in read is silent.”
* Repeat the Model, or the Lead, or the Test/check; or repeat a step in a routine a few times to firm it up.
* Immediately correct errors. “3 x 4 is 12… What is 3 x 4?” Firm up weak parts. “The a in read in silent. Sound it out again.”
* Provide a written list of steps, or even pictures, with worked examples and reminders. Put these on the board, or hand them out, so that students have help doing routines. Students could have a folder with worked examples of all of the routines they’ve learned.
* Review and firm steps and elements at the start and end of lessons.
1. Switch to a more scaffolded format. The formats below are arranged from the least instruction to the most instruction on each step and on the sequence.

a Whole Routine, or Total Task. MLTV *all of the steps* at once. If that does not work, try either

b. Forward Chaining: Straight version. MLTV *each* step, and then do all in sequence. Or try

c. Forward Chaining: Cumulative version. MLTV step 1; then MLTV step 2; then start over and MLTV steps 1 and 2; then MLTV step 3; then start over and MLTV steps one, two, three; etc. This provides more practice than Forward Chaining: Straight version.

d. Backward Chaining. Teacher models all the steps (for example, in doing a motor task), and students do the last step. Repeat, going backwards until students do the whole sequence. If students need still more instruction on steps and elements, try

e. Shorter Total Cycle Programming. Teacher breaks the routine into a sequence of chunks of steps; teaches each chunk; and then teaches students to do the whole sequence.

f. A Sequence of Four Formats, which is perhaps the most scaffolded.

*Guideline.*

If a routine has a lot of steps and knowledge elements (such as decoding words, algebra problems, science experiments), and if some students have a more difficult time learning, it makes sense to start with a more scaffolded format, such as Forward Chaining: cumulative version, or a Sequence of Four Formats.

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Chapter 15. The 5-Part Lesson

 Starting in the next chapter, we integrate all of our tools into engaging, comprehensive, and effective 5-Part Lessons that can be used with any subject, any grade level, and with diverse learners.

What is the 5-Part Lesson?

 Please look at a few lessons starting in the next chapter. Then come on back and we’ll see how excellent teachers outline 5-Part lessons.

1. The 5-Part Lesson combines two big traditions. (The Reference section shows a sample of research that the authors drew on.)
* *Explicit, teacher-guided instruction*; for example, the teacher models exactly how to solve math problems so that students quickly gain knowledge.
* *Implicit, inquiry/discovery instruction* that enables students to generalize, expand upon, and do more independent and group projects.

Explicit instruction and inquiry learning teach different and important *ways* to learn.

 The 5-Part Lesson uses them both---at the proper time.

2. The 5-Part Lesson teaches any subject at any grade level. Extensive scaffolding makes it an effective format for teaching diverse learners.

3. Teachers use the 5-part format to *improve lessons* in commercial programs (for example, reading, math, and language), by adding

* An overview to the start of lessons.
* Tasks on maintenance, generalization/discrimination, and fluency.
* Inquiry projects in Part 5. And
* More scaffolding as needed for students whose background knowledge is weak.

4. The 5-Part Lesson helps schools to develop consistent teaching methods across subjects and grade levels.

5. It provides a detailed outline to follow while teaching.

Please review figure 2.1 to see where 5-Part Lessons are located in a curriculum. Notice what is done in each part.

 Tammy O’Reilly, fifth-grade teacher at Pauline P. Pottermaker Elementary, outlines what the class will do in each part of today’s 5-Part Lesson on astronomy.

Part 1. Stimulate interest. Video trip through the universe.

Part 2. Review Earth concepts (equator, continents, oceans, crust) and facts (diameter, distance from Sun).

Part 3. Pre-teaching for Part 4. Define new concepts: orbit, centrifugal force, planet, satellite, density.

Part 4. Main instruction. Features of our solar system.

Part 5. Inquiry. Students invent a solar system.

 Ms. O’Reilly and the class read the outline at the start of the lesson and *before* they do each part. This is a scaffold for following Ms. O’Reilly’s communications and for summarizing what they learn. Ms. O’Reilly says,

“Girls and Boys…. First, here’s the big picture of what we’re going to learn today! Read it with me….”

Okay, let’s see some examples.

 Outlines of 5-Part Lessons

Cubism

 Felicia Fontaine’s 6th grade class is studying genres of painting (a unit) in their art curriculum. The current topic (abstract art) follows the topic on realism. They just finished Expressionism (Paul Klee, Wassily Kandinski). The next lesson on abstract art is Cubism. It will take several days. Here is a diagram of her curriculum. <insert table 15.1 near here.>

Table 15.1. How a Lesson on Cubism Fits into the Art Curriculum

Curriculum: art

Units: 1. Primitive, 2. Greek and Roman, 3. Islamic, 4. Medieval, 5. Modern

 Unit 5 Topics: (1) Realism; (2) Abstract: (2a) Expressionism; (2b) Cubism

 5-Part lesson: cubism (Picasso)

 Here is Ms. Fontaine’s brief outline of the 5 parts.

<insert table 15.2 near here>

Table 15.2. Ms. Fontaine’s 5-Part Lesson on Cubism

Part 1. Introduce the subject of the lesson. 1. History of Cubism. 2. Famous artists. 3. Examine examples.

Simulate interest. “Notice how cubism is so different from realism; geometric shapes.” Suggest inquiry projects. “We can cut out shapes and make Cubist art!”

Part 2. Review and firm knowledge from past lessons.

 Review realism. Students identify features of realism from examples.

 Compare and contrast realism with Greek and Roman painting.

 Review prior knowledge of colors, perspective, shading, brush strokes, use of palette knife.

Part 3. Teach new knowledge needed for Part 4—the main subject.

 Geometric shapes.

 How objects (faces, horses, houses) can be represented by geometric shapes.

Part 4. Main part:

The Cubist movement.

Biographies and works of Cubists (Picasso, Braque)

Examination of Cubist paintings. Identify geometric shapes and how they are connected.

Part 5. Independent and cooperative inquiry.

 Draw on poster board outlines of objects to represent.

Cut out shapes from magazines and colored paper.

 Arrange and paste onto poster board.

 Add color.

 Present to class.

Maling Omelets

 Betty Blake’s 4th grade class at Friendly Scorpion Elementary School is on Unit 5, “Cultures Around the World,” in the school’s social science curriculum. One topic in Unit 5 is foods in different cultures: farming, preparation, cultural significance. In the last lesson students cook a meal. Here is Ms. Blake’s outline. Later, she will add details, such as how she will teach.

*Scaffolding.* Students will have *guided notes* that tell what we do in each lesson Part. [See chapters 7 for scaffolding during lessons.]

Part 1. Overview of Parts 1-5. Stimulate interest and connect this topic with earlier ones. Specifically,

Review

* Cultures and foods in Africa, Mexico, India.
* Concepts. Say, read, write, and define crop, family, rice, edible, village, agriculture, ceremony, irrigation, harvest.
* Facts such as:

“These villagers dig irrigation ditches.”

* Rule relationships.

 “Farmers distribute food to all families equitably—the more members, the more food.”

* Routines.

The stages in growing rice, starting with planting.

How ceremonial meals are prepared.

Seasonal changes in village life?

Part 2. Practice Relevant Prior Knowledge to Build Strength.

Task 1. Review eggs, cheese, and butter. Where they come from; how they are made.

Task 2. Read a *generalization* set of *new* words made out of letters from earlier words.

Earlier words: crop, rice, wet crop (rice), dry crop (wheat) family, edible, village, agriculture, ceremony, irrigation, harvesting.

New words made by re-arranging earlier words: villagers, inedible, edibility, migration, traditional, families, agricultural.

Note. These tasks take only a few minutes.

Part 3. Pre-teach New Knowledge Needed for Part 4, Where We Learn to Make Omelets.

“Students need new knowledge in order to read and follow the recipe. I will teach: cracking eggs, stirring, slicing vegetables, using a stove.”

Discuss *small group projects to expand knowledge:* making omelets.

Part 4. Main Part of the Lesson that Builds on (Integrates) Parts 1-3, and prepares students for Part 5 (Inquiry).

Reading and following (doing) the recipe is new knowledge—the phase of *acquisition.* Students will *integrate* all the elements that they have learned into the omelet-making routine.

Here’s how we’ll learn the *routine*….

Task 1. I will *model* reading and doing *each* step (I do). Then students will read and do each step with me (*Lead*, or We do). And then students will read and do each step by themselves with help (*Test/check*, You do). This method is called *forward chaining: straight version.* (See chapter 14.)

Now students are ready to do Part 5.

Part 5. Inquiry-discovery Project

Students will read and follow the recipe (a *routine*), step-by-step, as they will have practiced in Part 4. This, too, is an example of *integrating* knowledge elements into a routine.

Kids decide what veggies to add.

 Now that she has an outline, Mrs. Blake will add details, such as the instructional methods to use in each Task in each Part.

 Okay! We’ve seen two outlines of 5-Part Lessons planned by excellent teachers. In these lessons, students are *acquiring* new knowledge; *generalizing* earlier knowledge to new examples and situations; using knowledge *fluently* (accurately and quickly); *integrating* knowledge elements into larger wholes (reading a whole story); and *maintaining* knowledge through review and firming. It sounds like knowledge is important in children’s education!

Now let’s look at our first 5-Part Lesson—sharks.

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