Handling Errors

Martin Kozloff

James D. Stocker

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 Students will hesitate, get stuck, and make errors. This document tells how to prevent and correct them. Okay, let’s go.

Kinds of Difficulties and Errors

 Let’s see what *kinds of errors* students make.

* The teacher asks a follow up question. “What’s an example of an apex predator?” Students say…. *Chickens…* *Bunnies?.... Kittens are apex predators!* Not correct.
* The teacher asks students to sound out ‘predator’ and a student says *prebytor?*
* The teacher asks students to read ‘predator’ fast, and a student says *prreee…da….torr.*
* A student reads a math problem incorrectly.
* A student errs in math facts during multiplication or division problems.
* A student does not do the right steps in a math routine, and so gets the wrong answer.
* The teacher says, “Your turn to say the definition of predator,” and a student gives the definition of prey.

 Now let’s see *when* students are likely to make errors. Students are likely to make errors

* That they made before. “I forget how many times the divisor (13) goes into the first one or two numerals of the dividend (1245)!”
* When they are learning new knowledge (acquisition). “I don’t get it.”
	+ When they are asked to go faster (“I get all tense!”), or to generalize knowledge to new examples (“I don’t remember what to do?”), or to tell the difference between (discriminate between) similar-looking examples (“Which is which?”); or when they have not practiced earlier knowledge for a while (“I forget how.”).
	+ When they are distracted. “Is that a butterfly outside?”
	+ When their teachers use unknown words. “bellicose?... Huh?”
	+ When the teacher’s communications contain too much “noise” and do not tell exactly what the teacher wants students to learn. “What did she say?”
	+ When material that has many steps (routines) or elements (a definition that has many parts, such as mitosis). “You lost me there.”
	+ When students are not firm on elements needed to acquire new knowledge, or to generalize to new examples, or to go faster.

So, what do we do?

 We handle errors four ways. Please see References.
1. Anticipate and try to prevent errors with *pre-corrections*.
2. Correct errors.
3. Firm up weak parts.
4. Reteach.

Anticipate and Pre-correct

 Please skim chapter 7 on add-ons. *Some add-ons can be used as pre-corrections*. For example, *reminders* (“Check the sign that tells which math operation to use.”); make sure that students are *following* (“What do we do next?”); *repetition* (“Again, a simile uses like or as-if.”); *hints and partial prompts* (“Another word for turgid is mmuu…”); *written lists* of steps and instructions; and *highlighting*.

 Here are examples.
1. Reminders to prevent errors.
 a. “Quotient is the number we get when we divide a dividend (like 6) by a divisor (like 3). The quotient is 2.”
 b. “In Step 1, we read the problem. 43 into 567 equals what? In Step 2 we divide the divisor (43) into the first two digits of the dividend (567). We get a number, a quotient so far (1). Then, in step 3, we multiply the divisor (43) by that number (1).”
2. Tell students what to do to do.
 a. “Point to the glacier and say the name…. glacier.”
 b. “Here’s our new word. brood. Look at the two letters oo. We’re going to say oooo, as in tool.”
3. Make sure students know what to do.
 “Point to the letters (in brood) that say oo…. What are you going to say?” *oooo.* “Yes,
 oooo…. Now sound it out.”
4. Help students to focus.
 “This (point) is the ones column.”

“You (touch under the letters, point to the internal organs on the diagram, trace the striations in the sandstone) with me.”

5. Provide written lists of steps with worked examples.

However, students will make errors even with pre-corrections. What do we do? We correct errors; firm up weak parts; and if necessary, we reteach.

Error Correction

 The basic format is MLTV: Model the correct answer; Lead students through doing the correct response with you; Test/check by having students do the corrected response; Verify the corrected response; Back up and start over to firm it up; Re-test later. Again….

* Model the correct response; for example,

*Reading a word.* “The word is triangulate… tri…an…gu…late… triangulate.” Note the add-on---breaking the word into easier-to-read parts.

*Repeating a definition* so that students get it exactly right when it’s their turn.

“Listen again… Schist is a type of… metamorphic rock… composed of layers of minerals…that have been changed… due to heat and pressure.” [Note the pause and stress.]

*Identifying an example.* “This *is* an example of acceleration. The car’s speed is increasing more during each unit of time and distance.” [Note, Teacher modeled the feature that defines the concept of acceleration, rather than just saying, “Wrong! It’s acceleration.”]

* Lead. Maybe have students do the corrected response with you. “Say triangulate with me.”
* Test/check. Have students do it on their own. “So, is this schist?... *Yes…* How do you know?”
* To make sure students “got it,” repeat the Model, Lead, and/or Test/check steps to firm students’ corrected response.
* Verify the corrected response. “Yes, rreeead. You didn’t say the sound for letter a. Now you got it!”
* Back up a few items (for instance, in a set of examples to identify or on a list of words to read); move forward through the examples again; and *retest* the corrected item(s). For example, here’s the list in order.

eat

eats

rod

pod

read

real

seal

Some students misread read, as reeaahhd. You corrected it, above. Now you say, “Start over with rod.” In other words, you are building *recall* rather than just *imitation* of your correction.

*Perhaps add a pre-correction.* “Remember, [read, road, load, boat]. Don’t let this letter [a] trick you. We do not say it. Not reeeahhd… reeeed.” Or, “Remember, if speed increases during each unit of time and distance, it *is* acceleration…. So, is this an example of acceleration?”

* Retest later.
 Here are examples of retesting.
1. Reading words.

 Students are reading a word list. sit, fit, slip, lip, am, slam

 *Test/check.* “Your turn. Read this word [slam]… Get ready…”

 Students err. *slim…. slap… lamp…ham…*

 *Model.* Teacher *interrupts* the flow of errors (corrects immediately), and says, “That word [points] is… ssllaamm…. ssllaamm.”

 *Test/check.* “Sound it out.”

 *ssslllaammm*

“Again.”

 *sssllaamm*

 *Verification.* Yes, ssllaamm. Now you got it.”

 *Back up.* Teacher has students back up several words on the list. “Start over with (points) this word….” As students work forward to the word slam, the teacher says, “Don’t let it trick you.”

Note. The teacher might follow the Model with the Lead. “Read our word with me….” *sssllaamm…* And then do the *Test/check* step. “Your turn. What’s our word?”

2. Definition

 *Test/check.* “England was ruled by Queen Elizabeth II—a hereditary ruler. Was England then a monarchy?
A few students say, *No.*

“Why not?”

 *Because the ruler was a queen.*

 *Model.* “Monarchy is rule by one person, usually inheriting the throne. It doesn’t matter if the ruler is a man or woman. Under Elizabeth II, England was ruled by one person who inherited the throne.”

 *Test/check.* “So was England ruled by a monarch?”

 *Yes… It looks like it… I guess so.*

 *Test/check.* “How do you know.”

 *Because Elizabeth was the one ruler….*

“Does man or woman matter?”

 *No…*

 *Verification.* “Now you got it!”

3. Simple addition.

 The class is doing a delayed acquisition test of addition problems on the board.

 *Test/check.* “What is three plus four?”

 A few students make a simple mistake. *Eight…. Six… Huh?*

 *Model.* The teacher quickly says, “Three plus four is…. seven…… seven.”

 *Test/check.* “What is three plus four?”

 *Seven...*

 *Verification.* “Yup, three plus four is seven.”

 *Back up.* The teacher backs up several problems and says, “Restart here….” As the class gets close to three plus seven, the teacher cautions, “Don’t let it trick you. We have three…. And we have four… So, we have…”

 *Seven!*

 *Verification.* “Yes, you got it right again!”

 The teacher *Retests* later.

4. Identifying parts.

 The class is reviewing parts of mountains: peaks, glaciers, tree lines, base, debris, ravines.

 *Test/check. “*Point to the ravine on this mountain.”

 Some students point to the glacier. *Here it is…
 Model.* “This (point) is the ravine…. See, it is a deep cut downwards. See the sides?” [Teacher adds the defining feature. She does not just say, “This is the ravine… Is this the ravine?”]

 *Test/check.* “So, what is this?...
 *ravine…*

 *Verification.* “Yup. That’s the ravine.”

 *Test/check.* “How do you know? What features define ravine?”

 *A deep cut in the mountain... Steep sides… Goes down…*

*Verification.* Yes, a deep cut with steep side that goes downwards. You are smart to use the definition!

 *Back up.* Teacher backs up and retests the parts. “Start over….” As the class gets close to the ravine, the teacher says, “Don’t let this one trick you. It’s a deep cut in the rocks. So, it’s a… rrr [partial prompt]…”

 *Ravine!*

 *Verification.* “Smart! You got them all!”

5. Sentence reading.

 *Test/check.* “Okay, read this sentence.” [She wants to play.]Four students read…

 *She wants to (pay, pray, stay).* [They are guessing, not reading the letters!]
 *Model.* “That word is plllay. [Point to the l.] This letter says lll.”

 *Test/check.* “What sound?”

 *llll*

 *Verification.* “Yes, lll.”
*Test/check.* “Sound it out.” [Points to the lll as a reminder.]

 *plllay.*

 *Test/check.* “What word?”

 *play
 Verification.* “Yes, plllay.”
 “Spell play.”
 *p l a y* “Start the sentence over. When you get here [point to the l] say llll.” (Or, “What are you going to say?”)

Part-firming

 Students may be *weak on knowledge elements* used in a math routine; or words/concepts used in a definition; or rule relationship statements in a theory; or facts in a history time line; or movements needed to draw a line on a graph. In fact, a whole class might be weak on elements such as letter-sounds, or math operations. [That’s why we review, review, and review.] Error correction (above) of the *whole* word, problem, or task may not work very well if elements are weak. So, we need to focus on the weak parts.

 Here is an effective format developed by Gleason (1999).

* Identify the weak parts.
* Firm them up with Model, Lead, Test/check, Verification. Repeat a few times.
* If we are going through a set of words, problems, or steps in a routine, back up and start over,
* Retest.

 Here are examples. The class is reading a word list. lip, skip, pan, span, slip, slam, man, lot, slot. A few students misread slip, slam, and slot. Mr. Redmond sees that they are weak on the sl part. So, instead of correcting the whole word---“That word is slip… What word?” (which probably won’t work because students don’t know the sounds that go with sl), he *first* firms up sl, because that part accounts for the errors.

*Model.* “Listen. These letters [points to sl] say ssslll…. ssslll.”

*Lead.* “When I point the letters, you say the sounds with me. We’ll say ssslll [pre-correction]. Get ready… Go!”

*sssslll*

“Three more times!”

*ssslll…ssslll…sssll*

*Verification.* “Oh, you guys are good! Yes, sssslll.”

*Lead.* “Now read the *whole* word with me. When I touch under the letters, we’ll say the sounds together. Remember, sl says ssslll.” [Pre-correction.]

*ssllliiip*

“Again, three more times.”

*ssllliiip… ssllliiip… ssllliiip*

*Test/check.* “Your turn. All by yourselves. What do you say when you see sl?” [Reminder]

*ssslll*

*Verification.* “Yes, sssslll.”

*Test/check.* “Go!”

*ssllliiip.*

“Again.”

*ssssllliiip.*

*Verification.* “Yes, slip. You tried hard and you got it.”

*Back up.* “Let’s start over with this word.” [Points to lip.]

*lip*

“Yes, lip.”

*skip*

“Yes, skip.”

*pan*

“Yes, pan.”

*span*

“Yes, span.”

“Be careful… What will you say?” [Points to sl in slip?]

*ssslll*

“Yes, ssslll… Read the whole thing!”

*slip*

“Yes, slip. Next word. Be careful.”

*slam*

“Yes, slam!”

[The class continues with the list. They repeat it to firm it up and go faster—build fluency.]

 What happens if teachers do not do part-firming? Answer. Students will make the same errors again and again, and, whenever a whole thing (word, sentence, problem, definition, task) depends on that small part, it will also be incorrect. Students’ knowledge becomes like a wall with more and more bricks missing.

*Your turn.*

Please invent an example of part-firming with multiplication of two-digit by one-digit numbers, such as 10 x 3, 12 x 4, 11 x 2, 14 x 3, 23 x 4. Whenever there is 3 x 4 in the problem, some students get it wrong. They say 7 or 11. What’s the weakness? How might you use part-firming?

  Reteaching
 If students keep making errors even after error correction and part-firming, it’s probably because they are weak on *many* knowledge elements/parts (such as letter-sounds in words, math facts, steps in routines), and Learning Readiness (such as calmly attending, taking turns—chapter 9). So, we have to reteach. How? Using MLTV, but this time…

 with more scaffolding.

What scaffolding?

* Short review and firm-up sessions on students coming to the teaching area (to the board, to desks or tables) quickly, sitting calmly, taking turns, following the teacher’s finger, and responding quickly. Reinforce these desirable behaviors during lessons.

“I love the way you came to your tables so quickly.”

“You are waiting your turn so calmly, Rodney! That’s excellent classroom behavior.”

“You sat tall and responded so fast when it was you turn! You’ve earned a music video!”

* Reminders. “Make sure to…”
* Repeating until students are firm on letter-sounds, math facts in solving problems, or steps in a routine. “One more time!”
* Checking to make sure that students know what to do next. “The next step is……”
* Hints. “Three times four is twww…”
* Pointing. “Divide 13 into these two numerals.”
* Written lists with worked steps and reminders.
* And lots of praise for even small improvements.

 Well, that’s it for scaffolding. Now let’s teach classes and concepts, facts, rule-relationships, routines, and 5-Part Lessons.

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