This work was originally published as a series of articles in the *Journal of Precision Teaching* (White, 1985a; b; c; d). I had been contemplating the publication of some article concerning performance aims, but this particular format and venue was prompted by the untimely death of my “chart father,” Eric Haughton. Eric and I had argued long hours over the best way of establishing performance aims. This was written in large part as a tribute to Eric and what he taught me. Much of the “humor” (should you choose to call it that) will only be understood by people who knew Eric. Hopefully, it, and the informal style, will not detract from the basic ideas I’ve tried to present. Thank you Eric.

This manuscript explores how well a skill needs to be learned in order to make it useful in the “real world.” Most performance aims found in education are “accuracy” based — the ratio between correct and error performances a learner must achieve before we can (presumably) be confident that the skill has been “mastered.” Some educators want a pupil to be “100% accurate” in the computation of basic math facts, for example, or (much to my dismay) “at least 80% accurate for 3 out of 5 consecutive days.” I actually saw an IEP objective that read, “John will cross the street safely with 80% accuracy for 3 out of 5 days!” Could they really have considered what they were saying? I don’t think so. More to the point, accuracy alone has proven to be a very poor predictor of eventual skill-use and success.

“Fluency” — how quickly and easily a skill can be used — is at least as important as accuracy, and usually much more important than accuracy in predicting successful skill use. Still, “magic fluency” standards can be elusive. Perhaps Aim★Star Wars will make finding them a little easier.

… and now we begin …

Once, a long, long time ago, on a charted performance record far, far from aim, the Learner Rebels were struggling to overthrow the bonds of the evil Normie Empire. On the desert planet of Kanada, far below the conflict which raged above him among the Uni•versa•tay battle cruisers, young Eric dreamed of leaving Uncle Owen’s organic behavior farm and becoming a star-fighter for the Learner Rebels.¹ “Performance Standards! Who needs them?” he shouted (Haughton, 1982).

It will take Uncle Owen a long time to understand. Perhaps, though, there is still time before the storm troopers overrun his small, isolated, not very special homogenized behavior dairy. Just perhaps. This is the story of Uncle Owen’s struggle.

Two years before young Eric hurled his angry challenge at the stars, he was carefully considering what he had learned about performance aims (Haughton, 1980). He wrote of the basic reasons for establishing aims, reviewed more than a little of the history behind attempts to find meaningful performance aims, and charted a path for future

¹ For those of you who might be misled, “Uncle Owen” was not really Eric’s uncle. Indeed, as I mentioned earlier, Eric was Owen’s “chart father” during his graduate school years at the University of Oregon. Owen owes much to Eric, and might never have known of the Force if not for his efforts. If Eric felt a reluctance to abandon Owen to his own fate, it was not out of familial loyalty, but rather, the concern and patience which only the superfluent can have for the somewhat slow. Thank you Eric.
growth. Basically, he identified four possible advantages for establishing high standards: (1) improved skill retention over periods of disuse, (2) greater endurance over periods of intense skill use, (3) improved rates of learning with related but more complex tasks, and (4) improved performance quality. With the possible exception of performance quality. Eric contended that a skill would generally prove more useful as the learner becomes quicker and more fluent in expressing the skill. He believed that quality was also likely to improve (e.g., handwriting becomes more legible) as frequencies accelerated, but only up to a certain point. Above that point, quality might suffer. Even when seeking greater quality, however, superfluency might be beneficial. If necessary, slowing down to achieve a particular quality in a skill might be easier than speeding up to meet special situational demands.

Fundamental to Eric’s arguments is the premise that a skill should be useful! It should not be lost once instruction is terminated, nor should it be so effortful that it cannot be used over an extended period. Similarly, if the skill in question is one step in a sequence of instruction, then the skill should be sufficiently mastered to allow rapid learning in subsequent curricular steps. That makes sense. I find no fault in the logic. Whether improved frequency actually leads to those ends is an empirical question, but one for which a great deal of support has been garnered (Berquam, 1981b; a; Binder, 1981; Haughton, 1972; 1980; Lindsley, 1977).

Unfortunately, knowledge of a general relationship (i.e., that improved fluency generally leads to improved skill usefulness) does not always transfer easily into specific frequency aims. Several studies with “mixed results” have been reported in which higher frequency aims did not always translate into improved applied performance. For example, Haughton (1980) reported a case in which higher frequencies did not lead to superior retention of math skills, an outcome also found by the Great Falls School District Precision Teaching Project (Clement, 1978). In both of those studies, the authors conclude that relatively low frequencies in math were sufficient to maintain the same low frequencies over time. Perhaps those low frequencies would prove nonfunctional when learners attempt to apply their skills in daily life. Unfortunately, the long-range application of a skill can be difficult to study.

It’s relatively easy, however, to study the notion that fluency at one step in the curriculum will facilitate progress at subsequent steps. All we need to do is compare the celerations’ (progress)

2 — Aim★Star Wars

achieved in successive curricular steps. If daily progress remains high as the learner moves from one step in the curriculum to the next, he must have been reasonably well prepared to move on. If progress begins to fall off, perhaps the fluency aims were not high enough to prepare the pupil for advancement in the next step of the curriculum. Evans, Mercer and Evans (1983) employed just such a strategy and found that, “… a relationship between frequency of saying letter sounds and growth during the subsequent task of saying CVC trigrams was not clearly demonstrated.” They concluded that they had not found the “optimum or critical frequency for the prerequisite skill.” In other words, faster is still better, we just haven’t found the “right frequency…” Maybe, but the whole issue of “prerequisite skills” and the need to develop fluency at each level in a curricular sequence is now being seriously challenged. It would appear that large “step ups” and “leap aheads” to high levels in the curriculum will often result in improved learning and higher levels of performance. That often seems to be true even if the pupil is advanced to higher levels in the curriculum before earlier “prerequisite” skills have been mastered or even demonstrably acquired (Bower and Orgel, 1981; Eaton, 1982; Johnston and Pennypacker, 1980; Liberty, Haring et al., 1980; Lindsley, 1981; McGreevy, 1980). The results can sometimes be quite dramatic. In one case, for example, a learning disabled teenager “leaped” from working on “times-eight” math facts to addition, subtraction, division, and multiplication of complex fractions without “mastering” the intervening curricular steps! He progressed much faster after the leap-up than before (Eaton and Wittman, 1983). What does that tell us about “prerequisite skills” and the need to reach some pre-established performance aim before moving ahead in a curriculum? Nothing’s certain.

Where are we? What aims do we establish? How do we find that “optimal frequency?”

The issue of a functional frequency aim for a particular skill and a particular learner is still empirical — we will never know how well a performance aim prepared the learner for meaningful skill usage until we try it and see. Did the learner retain the skill? Did the learner actually use the skill successfully in the “real world?” If so, then our performance aim was at least adequate. If the skill doesn’t prove useful, well, we can try, try, try again (Lindsley, 1971).

The empirical approach to validating an individual’s performance aim is certainly desirable and often not difficult. At times, however, it’s not possible for us to follow our learners and determine how well we prepared them to succeed. Moreover, we have to have a place to start — an “aim star” by performance can change over time. In this case, read “celeration” to mean, “rate of progress.”
which to guide our ship. We need at least an initial goal or, as one of Eric’s second grade learners pointed out, we’ll be “aimless.” Where will we find those “aim stars” to guide us in our initial attempt?

**Traditionally, People Look to the Typical**

The most common approach to setting aims lies in the assessment of “normal” or “competent” performers. The vast majority of published aims in the *Journal of Precision Teaching* and elsewhere are derived by assessing a pupil’s peers, adults, or to rely on one or more of the “large project’s” data sets to tell us what is “normal” (Mercer, Mercer et al., 1982). Why? Well, the logic goes, if most kids are able to make it with a certain frequency, then it ought to be good enough for our kids. That may not always be true.

Normal peers are often far from competent. Even typical adults fail to maintain many skills at a useful level. For example, in a review of the literature, Horton (1985) noted that approximately 98% of all American adults “do not compute.” They are so dysfluent in basic math skills that they let the bank, the store clerk, or the cash register do any necessary calculations. When they are forced to work with numbers, they turn to a calculator for even the simplest of problems. Should we use these people as models for our performance aims? No.

At very least, we should select competent performers, not just typical performers, as models. Unfortunately, difficulty could still arise. As Haughton (1980) pointed out, in order to maintain and use a skill at one frequency, it is often necessary to learn and practice the skill at a much higher frequency. Conversely, notes Haughton, our aims may only have to bring a learner up to a level where he or she is able to practice and continue learning without our help. Going all the way to “terminal competence” might not be necessary. Haughton estimates that an “independent practice” level may be as low as divide-by-two (+2.0, or half) of the eventual fluency desired for a skill. When we assess normal peers and adults, therefore, we may only be measuring what successful performers do, rather than what successful learners must do in order to become successful.

Where, then, do we go? At least three alternate approaches for setting aims have been suggested. First, one can simply shoot for “superfluency” in all basic skills. Haughton (1977; 1980) suggested minimum fluency aims of 200 to 400 per minute for all basic writing and computation skills, 2000 per minute for “scanning skills,” 600 to 1200 per minute for “study reading skills,” and 2000 to 3000 notes per minute for competent banjo playing skills — just to name a few of the pinpoints which interested him. Are those aims reasonable? They are certainly attainable. In at least some cases, however, one might wonder whether much lower “independent practice” or “ready to move on” aims might be more efficient for rapid movement through the curriculum (Evans, Mercer et al., 1983).

A second common strategy for estimating reasonable performance aims involves the assessment of “tool skills” (e.g., free/write digits as a tool for see/write digits to answer computation problems; free/say alphabet as a tool for see/say words in context). White & Haring (1980) suggest that tool skill frequencies should be at least x1.5 to x2.0 higher than “contextual use” frequencies. If one wishes a child to write digits to form math fact answers at a frequency of 80 digits per minute, for example, the child should be able to free/write digits at a frequency of at least 80 x 1.5 = 120 to (80 x 2.0 =) 160 per minute. Unfortunately, that strategy requires that one has an established the aim for the “use skill.” To avoid that trap, one might use the same basic ratios between tool- and use-skill frequencies, but reverse the direction of computation. That is, assess the child’s current basic tool skill, divide by a factor of 1.5, and use the resultant figure as the performance aim for higher level skills which use that tool. If the pupil can free/write digits at a frequency of 100 per minute, then the aim for basic math facts might be (100/1.5 =) 67 digits per minute.

The advantage in the “work down from tool skills” approach is that it is always completely defined by the pupil’s own performance — it is not necessary to establish one aim (the use-skill aim) in order to determine another aim (the tool movement aim). However, if the child is not already competent in the tool skill, performance aims for the higher level skill would just reflect that incompetence.

Other variations on the theme of tool-skill/use-skill frequency ratios have been suggested (Eaton and Hansen, 1978). Still, utilizing tool-skill frequencies as a method of establishing contextual use-skill frequency aims appears to require some leap of faith. That is, we have to assume that we know what the use-aim should be (so one can establish tool movement aims), or that the learner’s tool movement frequencies are functional (so we can use them to establish higher-level skill aims).

---

3 “Free/write” is an example of what Precision Teachers call “learning channels” — the means through which the learner gets the information needed to respond, and the method used to respond. “Free,” in this case, means that the learner is not constrained by external cues or directions, but is free to respond at his or her own pace. “Write” is the method the learner will use to demonstrate the skill.
The last strategy for establishing aims that I have seen in practice is really a method for avoiding exact frequency aims altogether. In Shawnee Mission, Kansas, Henri Sokolove encouraged an approach suggested to her by Ogi-Wan Sixycle, the original Learner-Knight. Each pupil simply works on one step in the curriculum for as long as he or she continues to get better. When the pupil “goes flat,” the next step in the curriculum is introduced. No remediation; no added cues; no artificial consequences — just “move on.” Such an approach certainly embraces two concepts dear to the hearts of Precision Teachers — “listen to the children” (when I stop learning it means that I want to do something different) and “emphasis on learning” (it matters not where I am, just how fast I’m getting somewhere else). Upon inspecting some of Henri’s charts I was surprised by just how low some of the learners’ frequencies were (e.g., grade level oral reading at 20-50 words/minute). However, the pupils were undeniably progressing nicely through the curriculum, were apparently well into the “independent practice” range mentioned by Eric (Haughton, 1980), and continued to improve on levels of the curriculum no longer directly taught.

Despite Sokolove’s very convincing and very extensive data (Haughton, 1980), I must admit that the “as long as you progress” strategy is very difficult for me to adopt. Still, I have become much more comfortable with the idea of moving ahead in a curriculum at the earliest possible opportunity. Step-aheads and leap-aheads are undeniably effective ways of accelerating learning in sequential material with many people. I am more reluctant, however, to “let the learner decide” when it comes to establishing frequency aims for terminal skills — skills which should become immediately integrated into the learner’s daily behavioral repertoire, and which must be maintained and used without continued instructional support.

I am simply unwilling, as a teacher, to abdicate responsibility for ensuring that at least minimal competencies are achieved in at least some important skills. I am unwilling to stop the program in dressing just because the learner goes flat at a frequency of .02 dressing sequences per minute (i.e., taking 50 minutes to complete one dressing sequence). Those slow performances will not be tolerated by most parents. I am unwilling to stop instruction (or at least continued practice) in basic math skills just because the pupil begins to decelerate after reaching 16 digits per minute. I know that such a frequency will not be sufficient for the pupil to keep up in science class, and I suspect that the learner would not maintain or use that skill as an adult.

I feel more comfortable with a “compromise” strategy suggested by Haughton (Haughton, 1977). Begin by establishing a “minimum frequency aim” and a “maximum frequency aim.” The minimum frequency aim defines the lowest performance you believe will adequately prepare the pupil for advancement in the curriculum or for independent use of the skill in applied situations. If the learner falters before reaching the minimum frequency aim, the program is modified to facilitate continued learning. Once the minimum performance aim is reached, the learner decides what will happen next. As long as the learner continues to progress, the program is continued; once the learner “goes flat,” the program is ended. A maximum performance aim is set at the level beyond which the teacher/manager is not interested in continuing to work with the skill. If the learner wishes to continue to develop the skill alone, fine, but the manager discontinues formal instruction for that skill and introduces a program to develop some new skill.

Where are we now?

I’m back at square one, trying to decide what those minimum performance aims should be. Am I left with norms, fancy ratios and simple guesswork? Is there no better way to estimate what might be functional? Must we simply “try it and see,” follow up, and adjust as necessary? Perhaps not.

After carefully reviewing what young Eric, Ogi-Wan, and others (including, of course, the Learner-Rebels themselves) have been trying to tell me over the years, I would like to suggest several considerations which one might make when establishing a preliminary frequency aim. For the moment, I will limit my concern to “terminal proficiency,” that is, the level of performance which will make a skill immediately useful to a learner, not just as one step in a sequence, but as an independent skill in its own right. In short:

\[\text{Aims should ensure Independence, Maintenance of the skill over time & achievement of outcomes of Service to the learner.}\]

Each is based on some notion of “competition.”

Peer Competition

The vast majority of performance aims are established on the basis of some form of “peer competition.” We assess what most kids do, and then assume that if a new learner can achieve those same levels of performance, she will be

---

4 Ogden Lindsley, the progenitor of Precision Teaching. Eric’s chart-father and Owen’s chart-grandfather.

4 — Aim★Star Wars
“competitive.” In some cases that may be quite true — in athletic or academic games, or competing for a position as a keyboard operator, for example (White, 1980). Attempting to provide a learner with normal fluency might also be important socially. “Slow kids” stand out, and “differences” can lead to isolation (White, 1980). Providing the learner with the ability to compete with peers can lead to much easier acceptance by peer groups. That’s nice. But “normal” is not always nice.

Patsy, a forth grader with a mild disability, had difficulty in correctly pronouncing short vowels. Her teacher, Ruth Mundt, decided to help her develop more fluency in saying the “hard sounds” by simply having her read from a list of C-(short vowel)-C words each day for one minute. Ruth logically reasoned that if Patsy could say the sounds as fluently as her nonhandicapped peers, all would be well. A quick assessment of her peers revealed that an aim of 40 sounds per minute should do nicely for putting Patsy “in the middle” of the group. As shown in Chart 1, Patsy had no real difficulty in achieving the aim of 40 sounds per minute. As her fluency approached that of her nonhandicapped peers, her errors just seemed to disappear — usually a good sign. After discontinuing the program, however, Ruth noticed that Patsy began to slip back into her old habits during normal conversations and oral reading practices. When a formal assessment was conducted a month later, Patsy had dropped to half her former fluency and the errors had come back. The program was reinstated, the “typically-developing peer” aim reached once again, and the program was terminated once more. Three weeks later Patsy was up (down?) to her old tricks, so it was back to the program.

At this point, many fine teachers would point out that Patsy was having difficulty in “generalizing,” and that contingencies should be established in the “real world” to encourage and develop the skill where it will actually be used. In other words, Ruth should start prompting Patsy and providing corrective feedback throughout the day. Fortunately, Ruth was reluctant to engage in activities that might prove very embarrassing to Patsy. When was the last time someone corrected you in front of your friends? Instead, Ruth opted to try for super-fluency. Ruth doubled Patsy’s frequency aim (“...now Patsy, you have a problem, so you must be twice as good as those who do not have a problem...”). It took only an extra 9 days to move beyond the old aim of 40 per minute and reach the new aim. The program was terminated again. A check one month later showed that Patsy still super-fluent, and Ruth never noticed another problem during reading or conversation. Undoubtedly, Patsy is now a speech therapist or a linguistic specialist in the U.G. (United Galaxies).
Obviously, “competition with peers” was not the appropriate method for establishing Patsy’s aim. However, Ruth was diligent in following Patsy after the program was stopped to see if the new behavior was actually useful. When her faith in the Normies failed, she carefully studied the plans of the Deathstar that young Eric had retrieved while rescuing Princess Learna, and was finally able to locate the weak spot in the monstrous Normie machine. She put her faith in the Learner-Force, and found an aim that worked!

Amid thunderous MUSIC, the Normie Deathstar was destroyed.

How could we have guessed before the program started that Patsy needed superfluency? The clue might lie in another type of competition — a competition not with others, but with ourselves.

Episode II: Return of the Learner

In Part I of this serial, Learner Knight Ruth managed to help Patsy develop skill in saying long vowels correctly — a skill strong enough to demonstrate independently, maintain over time, and provide a real service for her in every day life. Being as good as her “normal peers” wasn’t good enough. She had to be better, much better. What was there about her performance that might have made us suspect the need for a higher aim when we started the program?

Breaking Old Habits

Upon reflection, Patsy could already speak. Others could understand what she was saying. Most of the time, neither her peers nor the adults in her world made fun of the way she pronounced long vowels, so there was little reason to change her behavior. Moreover, she’d been using the incorrect speech patterns all her life. To change her behavior, we needed to break a life-long habit, and simply bringing her new skill up to the fluency level of her old behavior patterns wasn’t good enough. We needed to make it so easy to speak correctly, that she’d find no reason (even when not thinking) to slip back into her old habits.

Whenever we want to replace an old behavior with a new one, therefore, it’s probably a good idea to begin with an assessment of the old behavior’s fluency. To break the old pattern, we need to set the performance aim for the new behavior to a level higher than the fluency of the old behavior. Patsy spoke incorrectly as fluently as her peers spoke correctly (40 CVC words per minute), so Ruth helped her break that habit by setting the fluency aim for the new behavior (saying CVC words correctly) twice as high (80 CVC words per minute). It worked.

We want a child to “simply know” the answers to basic math facts instead of using her fingers to count up the answer. Set the basic fluency aim for math facts at a level twice as high as she’s able to use her figures to arrive at the same answer. If want to help a student hold a pencil correctly, the aim for “reach-grasp-raise” pencil correctly must be twice the fluency with which he already picks up a pencil incorrectly. To break old habits, set fluency aims that make it much easier to move correctly than incorrectly.

Achieving Balance with the Competition

“Beating the less desirable alternatives” can be a very useful strategy for establishing individualized performance aims. There are times, however, when that is really not the issue. There are at least some times when it is more important to simply “meet” the competition and put various behaviors within the learner’s repertoire into better balance. Chris’ hopping program provides a good example.

Chris wasn’t a physically disabled, but he was clumsy enough to become disabled if something wasn’t done. He was constantly tripping over his own feet, falling down, and generally banging himself up something fierce. Ms. Travato could have implemented a standard “takes steps without destroying himself” program, but decided instead to look more carefully at Chris’ individual behaviors. After a brief inventory of his balance and hopping skills (see Chart 2), it became obvious that Chris had a problem with the strength and/or agility of his left leg. What should she do? Should she build strength and agility in using the leg? What aim should be used? Most children of Chris’ age hop in the range of 40 to 150 per minute (Rae-Johnson, 1979) — much faster than
Chris could do, even with his strong leg. Ms. Travato could have set those normal fluencies as her aim, but wisely decided to use Chris’ own behavior for at least a starting point. She used Chris’ right leg performance as the aim for his left leg.

Following a brief but very interesting program, the aim was reached (see Chart 3). To make sure that her standard of comparison wasn’t changing, she also monitored the right leg (see Chart 4). By the end of the program, right and left leg frequencies are virtually. Chris’ hopping fluency is still less than “normal,” but he’s in balance. Is he still tripping? Tripping the light fantastic! He moves with the grace of a gazelle (well, perhaps not quite), and is now considering defection to the U.S.S.R.6 (United Soviet Star Republic) to make up for all the ballet artists we’ve gotten from them.

Sometimes we may need to use Normie standards. In many cases, however, it might be more effective to simply beat less desirable alternatives in the child’s own repertoire, or to bring different behaviors in the child’s repertoire into better balance. Put faith in the Learner Force.

Next we’ll consider other forms of competition. As Uncle Owen will discover in our next episode, learners are not always masters of their own destinies.

Episode III: The Normie Empire Strikes Back

We’ve discovered that “normal fluencies” are not always appropriate performance aims, but the Normie Empire doesn’t always react well to the rejection of its standards. There is another Deathstar.

Manager Expectations and Patience

---

6 Mention of the U.S.S.R. dates this manuscript, but the historical relevance with respect to ballet stars is worth it.
Until now, we’ve only considered adults and peers as possible models of competent performance. In addition to representing abstract standards of comparison however, peers and adults often assume the role of “manager,” and determine whether a learner will be given the opportunity to use a skill.

One possible role of a manager is to “do for the learner if the learner does not do for him/herself.” Parents will dress, feed, carry, and generally tend to all of their infant’s needs. The parent relinquishes control over such chores as the infant grows older and more competent, but often the transfer of control is slower than necessary.

I am the father of two fine young sons (Shaffer the Super and Heston the Hero) who are Learner Rebels. Both are quite capable of dressing independently (albeit, socks and shoes are a toss-up), but they dress themselves only when I allow it. On weekdays, when I must rise early, take them to preschool and get off to work myself, I usually assist them through most of the dressing routine. I am impatient. I do not want to rise forty minutes earlier to allow the boys sufficient time to do everything themselves. I am selfish. I am not unusual. The boys and I do have “dressing races,” when time allows, and they are becoming more fluent. Someday, when they can beat my time, I will allow them to do what they can already do.

What is the minimum fluency aim for dressing? How fast can the manager dress the learner? Multiply the manager’s fluency by 1.5 or 2.0 just to make sure the manager really has a reason to let the learner work independently.

What is the minimum fluency aim for eating? How fast can the manager feed the child? How long does it take the manager to clean up if the child does it alone? Put both those times together, increase the fluency by a factor of 1.5 to 2.0 to be on the safe side.

What are the minimum fluency and endurance aims for walking? How fast does the manager walk with a normal stride? How far does the manager want to walk on most occasions? Don’t increase those standards by any factor. You might even decrease them a bit. After all, the alternative is that the manager has to carry the child, unless there is a stroller or wheelchair waiting in the background.

What are the minimum fluency and intelligibility standards for talking? How long are most managers willing to wait before they begin to try and “guess” what the child is saying? Increase the standard to provide a safe margin.

---

These are, indeed, by children. Time has passed, however, and it is more common now for them to carry me to bed than the reverse.
If the learner exceeds the limits of the manager’s patience, then the learner will not be afforded the opportunity to practice the skill, even if the learner is otherwise basically “competent.” That, in turn, will lead to disuse of the skill, possibly a reduction in competence, and the skill will either not be incorporated into the learner’s regular behavioral repertoire (outside instruction) or will be integrated into that repertoire much more slowly than would otherwise be possible.

Managerial patience is often tied to the age of the learner. Imagine a very young child approaching a stranger on the street (under the careful gaze of the child’s parent) and saying, “...hi-eee... da-da...” More often than not, the stranger will smile, put the child on the head, and struggle to decipher the child’s next utterances. Put the same dysfluent verbal behaviors into the body of a young adult with severe disabilities. The stranger turns hurriedly away and pretends not to notice. The very young child is engaging in age appropriate behavior that, while dysfluent, is likely to be reinforced. The older individual fails to meet minimal age expectations and is consequated in a way that is likely to lead to a deceleration of the newly emerging skill.

The idea that a skill should be “age appropriate” has been well advanced, especially in the literature concerning the education of learners with severe disabilities. More often than not, the concept is reduced to an important but rather vague notion of “human dignity” — learners should not be taught things that make them stand out as behaviorally immature. As illustrated above, however, learning age-appropriate behaviors and fluency has other implications for skill development and demonstration.

Learner attributes will affect a manager’s expectations. Most people will wait patiently for a person with obvious physical disabilities to maneuver into an elevator. Put the same slow gait into the body of an obviously healthy child and people quickly lose patience. Similarly, most parents are quite supportive when their child has an occasional “accident” while eating, but are much quicker to lose their patience with a child who consistently spills milk or drops food on the floor.

Managerial expectations are of special significance when trying to integrate a handicapped learner into an inclusive classroom or other environment populated primarily by typically developing peers. Most teachers are likely to have a host of expectations developed over the years with typically developing learners. However, the time allowed for certain activities like reading an assignment might be unrealistic for the learner with disabilities. On the other hand, many teachers who have not worked with disabled learners hold unrealistically low performance expectations and will make counter-productive concessions. The child with disabilities in an inclusive class might be given much more time than is necessary to complete assignments; assignments might be “watered down;” and the curriculum is often excised of all challenge and significance.

Aside from rather specific expectations based on a learner’s age, obvious physical attributes, or “history,” the most important variable in determining a manager’s patience is likely to be time. It might not be the fluency (or dysfluency) with which the learner attempts to demonstrate the skill that is critical, but rather the time that the manager must invest in order to permit the learner to demonstrate the skill. The fact that it might take my sons thirty or forty minutes to dress is not the problem, it is the fact that I must rise early enough to prompt them to begin, and keep popping back to prompt them to continue, that is a problem. In most cases it is unreasonable to expect a manager to invest more than a few extra seconds (all at once, or spread out over a much longer period) to allow a learner the opportunity to perform a skill.

Counterbalancing the investment of time, in at least some cases, is a potential saving in the energy or work that a manager might have to expend if the learner does not perform the skill. As mentioned earlier, for example, a manager might allow a very young child to walk independently even if it takes longer to get somewhere. The alternative is usually the much more effortful task of carrying the child. Similarly, a parent might be more inclined to put up with a child’s slow eating behavior if it means that the parent is free of the task of scooping the food for the child every few seconds (interfering with the parent’s own eating). If allowing the learner to practice a skill means an increase in the manager’s workload, on the other hand, patience is much more likely to wear thin. Being free of the task of scooping the child’s food is of little value if the task of cleaning up after the meal becomes much more involved. Putting the learner into easily removed “big boy pants” instead of diapers to allow the practice of independent toileting may try the manager’s patience if the more effortful task of cleaning up “accidents” is too frequent.

Finally, the importance of all the factors outlined above — expectations, time, and effort — can be altered significantly by two additional concerns: other demands placed upon the manager, and the subjective “worth” of the learner’s attempts to demonstrate and develop the skill. At times a parent may be willing to slow down and allow the child to toddle along. At other times it will be necessary to reach some destination quickly and the parent will carry the child. At times I am willing to allow my children to dress themselves. At other times I must get to work quickly and cannot afford the luxury. Parents and teachers might place a high value on the development of new skills in their children and be willing to put up with initial dysfluency. Other managers in the learner’s world are less likely to be as tolerant.
So, it is not always possible to completely ignore the standards of the Normie Empire. While other standards may bring a learner to a level where the skill is of personal use and importance, Normie Commander Managers in the learner’s world may still have the power to determine whether the learner is allowed the opportunity to practice and use a skill. We may rely to a certain extent on the good will of some managers (especially parents and teachers), but even the most benevolent of managers will often have unrealistic expectations or special demands on their time. We must set our aims high enough to ensure that other people in the Learner’s world will allow the skill to be demonstrated. That means that the skill and fluency with which it is demonstrated should:

- be age appropriate,
- take little of the manager’s time,
- lessen the manager’s workload,
- not compete with other demands on the manager,
- or be of special worth to the manager.

The well meaning (but often evil) Normie Empire often strikes back at the Learner Rebel, prohibiting or discouraging the demonstration of skills within the Learner’s repertoire. The Deathstar is protected by the force field of limited manager patience and competitive demands. If Learner Knights are to defeat that system, they must attend to Normie expectations and the demands placed on the managers themselves. With a little nudge, the power of that force can sometimes be turned from the Dark Side.

**Making the Less Desirable Less Effective**

As Patsy showed us in Episode I, we sometimes need to build the fluency of new skills so they can compete effectively with older, less desirable skills. Greater fluency is also likely to improve the chances that managers will allow the new skill to be used. Sometimes, however, that’s not possible. The saga of Learner Rebel Paul is just such a story.

Paul would not have been welcome at Princess Learna’s table. He grabbed for food in a most unseemly manner. In last year’s class he had been taught to request the food he wanted in a more appropriate manner (by pointing, since he was nonvocal), but the new behavior failed to generalize and maintain, and Paul has reverted to

---

**Chart 3: Paul’s Pointing & Grabbing During Lunch**

**CALENDAR WEEKS**

<table>
<thead>
<tr>
<th>0</th>
<th>4</th>
<th>8</th>
<th>12</th>
<th>16</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>500</td>
<td>100</td>
<td>50</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

**COUNT PER MINUTE**

<table>
<thead>
<tr>
<th>Allowed to grab food</th>
<th>Denied any grabbed food</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**SUCCESSIVE CALENDAR DAYS**

<table>
<thead>
<tr>
<th>F.B.</th>
<th>F.B.</th>
<th>Laura Dickinson</th>
<th>Paul</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPervisor</td>
<td>Advisor</td>
<td>Manager</td>
<td>Behavior</td>
</tr>
<tr>
<td>DEPOSITOR</td>
<td>Experimental Education Unit</td>
<td>L.D.</td>
<td>L.D.</td>
</tr>
<tr>
<td>TIMEr</td>
<td>COUNTER</td>
<td>CHARTer</td>
<td>POINTS-to/Grabs Food</td>
</tr>
<tr>
<td>COUNTED</td>
<td>SMR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
his old “grabbing” behavior. This is a common story. Learners with disabilities are often noted for their “forgetfulness.” However, what if the desired skill was still really there, lying dormant beneath the concealing blanket of an older, more fluent behavioral alternative? We might try to increase the fluency of the pointing responses so it could compete more effectively with grabbing. When you get right down to it, however, what could be quicker than simply grabbing what you want? So, what if we made the old behavior pattern less useful? What if we unleashed the power of the inhibiting manager force field on the grabbing response?

In the first few days of Paul’s program he never pointed to the food he wanted, he just grabbed, so Learner Knight Billingsley (1985) and Laura Dickenson (Paul’s teacher) decided to put a force field around the grabbing behavior during lunch time. No “instruction” was provided — Paul was never told or shown what he should do. After all, he had been taught all that a year ago. He was only prevented from actually getting the food he tried to grab by making him throw it away. After a few confused days (see Chart 6), the light of the good side of the Learner Force shone through and Paul began to point to the food he wanted with the same fluency he used to display in grabbing.

Snack time was another matter, but encouraged by success in one setting, the force field was turned against grabbing during snack time. The desired behavior appeared almost immediately, without specific instruction, just by preventing the pointing behavior from being effective.

With a minimum of effort, it would seem, the power of that Normie villain Decel-Vader that lurks in all managers can be turned from the Dark Side. The mask can be ripped away, revealing a caring Learner Knight and unveiling the true power of the Learner Force.

In the next episode, “Scouts, Flankers and Rear Guard,” Uncle Owen returns to the question of finding aims that will allow the Learner Rebels to advance quickly through the curriculum.

---

**Chart 4: Paul’s Pointing & Grabbing During Snack Time**

**CALENDAR WEEKS**

<table>
<thead>
<tr>
<th>COUNT PER MINUTE</th>
<th>SUCCESSIVE CALENDAR DAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>F.B. Supervisor</td>
</tr>
<tr>
<td>500</td>
<td>F.B. Advisor</td>
</tr>
<tr>
<td>100</td>
<td>Laura Dickenson Manager</td>
</tr>
<tr>
<td>10</td>
<td>L.D. Timer</td>
</tr>
<tr>
<td>1</td>
<td>L.D. Counter</td>
</tr>
<tr>
<td>.1</td>
<td>Paul Behavior</td>
</tr>
<tr>
<td>.05</td>
<td>b SMR</td>
</tr>
<tr>
<td>.01</td>
<td>Experimental Education Unit</td>
</tr>
<tr>
<td>.005</td>
<td>Agency</td>
</tr>
<tr>
<td>.001</td>
<td>Timer</td>
</tr>
<tr>
<td>.0005</td>
<td>COUNTER</td>
</tr>
<tr>
<td>.0001</td>
<td>Charter</td>
</tr>
<tr>
<td>.00005</td>
<td>Points-to/Grabs Food</td>
</tr>
</tbody>
</table>

---

Paul: Points-to or Grabs Food During Snack
Episode IV: Scouts, Flankers & Rear Guard

In previous episodes we followed Uncle Oven’s diary as he tried to unravel the mystery of the Learner-Force concerning *terminal proficiency aims* — aims that will ensure a skill will be useful after instruction and artificial support are withdrawn. In this episode, Uncle Owen returns to the consideration of more elementary *intermediate proficiency aims* — aims that may not ensure the immediate usefulness of a skill outside instruction, but that will allow the Learner to move rapidly through a curriculum of related skills.

Advancement through a curriculum of related skills does not require complete mastery of each step along the way. Contrary to conventional wisdom, “leap aheads” to high levels in a curriculum has often proven quite successful in accelerating the progress of many learners (Bower and Orgel, 1981; Eaton and Wittman, 1983; Johnson and Jackson, 1980; Liberty, Haring et al., 1980; Lindsley, 1981; McGreevy, 1980). There seem to be many reasons for that success.

First, advancement to a higher level in the curriculum does not usually mean a complete abandonment of practice, assistance, and feedback for earlier skills. The learner will still encounter, still practice, and still receive feedback concerning most pre-primer words even when they are embedded within the context of a third grade reader. Addition and subtraction skills will still be practiced and supported when the learner receives instruction in long division. Given that continued support, it seems reasonable that the fluency standards for advancement through a cumulative curriculum might not have to be very high.

Secondly, higher levels in any given curriculum or task sequence generally represent larger, more functional units of behavior. “Picking up a shoelace” in isolation is not likely to be very useful for a learner, even if it will eventually prove useful as part of a shoe-tying task. Indeed, if the learner practiced such a small skill in isolation outside instruction, most people would think it was self-stimulation. “Stop that, you sill goose!” an observer might be expected to exclaim.

Advancing rapidly through the curriculum to a point where the learner is working on the entire shoe-tying task provides the learner with greater opportunities to accomplish something of meaning and value — something that has at least some chance of leading to accelerating consequences outside instruction. The value of working with
Aims (see the aim-stars performances should be at or above typical Normie relationships among skills. If a pupil is fluent, skill and to highlight any unusual patterns in the deficiencies in a learner’s demonstration of each Liberty (1970), was carefully designed to reveal story, one originally developed by Learner-Knight mastered by the end of the third grade. The invent-100ry, one originally developed by Learner-Knight Liberty (1970), was carefully designed to reveal deficiencies in a learner’s demonstration of each skill and to highlight any unusual patterns in the relationships among skills. If a pupil is fluent, performances should be at or above typical Normie Aims (see the aim-stars on the chart). Since all the behaviors being assessed use the same basic tool movement (writing digits), the “conceptual” difficulty of each task should be reflected solely by the frequency of correct movements demonstrated by the learner. As a task becomes more difficult, the learner’s correct performances will slow down. All skills in the sequence are actually tested on the same five days, so simple “passage of time” cannot account for performance increases or decreases across skill areas.

Jennifer’s performances confirm her lack of fluency in math. With the exception of the basic tool movement (free/write digits), correct frequencies are all below typical Normie Standards. Correct frequencies also fall off in a steady, predictable manner as task difficulty increases — most of the correct frequencies fall quite close to the solid, dark, decelerating line drawn across the chart. Correct frequencies for three skills are well above that line, however. Jennifer is doing much better than expected in two-column addition without carrying, two-column subtraction without borrowing, and simple multiplication facts.

A comparison of Jennifer’s two-column frequencies and her simple fact frequencies explains part of the mystery. Those frequencies are virtually identical. Jennifer is simply reacting to the two-column problems as if they were sets of two facts “scrunched together.” However, Jennifer has never been provided with instruction in multiplication facts. How did she learn even a few of those facts?

It turns out that Jennifer’s regular classmates are now studying multiplication. Jennifer is not even in the regular class during math period. She’s off in the resource room studying addition and subtraction, but she knows what the “regular kids” are doing. She wants to do it too. Somewhere, somehow, she’s been teaching herself multiplication. How dare she do this without the guidance of a teacher?

Fortunately, Jennifer’s teacher did not follow the tried and true method of “test up from the bottom until the child fails to meet aim and begin teaching there.” If she had, Jennifer would be studying “hear-to-write,” or possibly “ordering three-digit numbers” with a sprinkling of add facts. Jennifer’s teacher recognized her need to gain access to the natural accelerating consequences of learning what the others are learning, even if she’s “not ready.” So Jennifer got time to practice multiplication facts. She also worked on addition and subtraction, because she needed those skills too, at least in the long run.

This brings us to the last reason why leap-aheads without fluency on intermediate steps may work. Quite simply, what we might believe is “prerequisite” or the “natural order of things” may not be necessary or natural at all. Gary, a 14-year-old Learner-Rebel with severe mental retardation and physical disabilities, will scout the point and show us the way.

Gary needed to develop a wider range of “self-help” skills. One skill in particular would provide Gary with a bit more dignity and would be very helpful to his managers — moving from the toilet to a walker (and vice versa) without assistance. John Holliday, Gary’s manager, began as all good behavior analysts begin. He developed a detailed outline of the steps “required” to perform the desired task. He recognized the advisability of working with skills within a functional context, so he worked with all the steps in their proper sequence during each session, adjusting the levels of assistance he provided as necessary. The results are shown in Chart 8.

The first day was depressing. Gary failed to perform even a single step in the sequence correctly without full physical assistance. John had faith. The next day Gary performed two of the steps correctly. By the end of the ninth day Gary’s correct-steps-in-sequence were better than 20 per minute and errors were down to 10 per minute. Things were going so well, John reduced the level of assistance provided for each step.

Gary’s correct frequencies continued to accelerate, but at a much slower pace, and the errors were accelerating much faster. John knew he was supposed to turn to the “Traditionalist’s Normie Empire Handbook.” Things are not going well? You tried too move to fast. Slow down. Back up. Increase the level of assistance provided, at least for the more difficult steps.
“No,” cried John, aspiring Learner Knight that he was. “If Gary manages but one correct performance in five days I shall not retreat!” Instead, he studied Gary’s patterns of performance very carefully.

Gary wasn’t following the rules. John’s task analysis (developed with Gary’s special needs in mind) called for Gary to transfer each hand, one at a time, to the side of the walker closest to the railing, then (again, in two separate steps) transfer each hand to the wall railing. Most of Gary’s errors occurred when his hand seemed to “overshoot” the walker and begin to go directly to the railing. John had reacted to such tendencies as any good teacher would. He grabbed Gary’s hand before it got very far, plunked it down on the walker where it belonged, and recorded an error.

John cared more for Gary than the task analysis. If Gary wanted to perform the task in one step instead of two, that was all right. He began to allow Gary to skip any step he wanted. The next day the correct frequency edged up a bit and the error frequency plummeted. Seeing the futility of counting steps in a sequence that Gary apparently did not need, John began to count only “whole transfers” and provide assistance only when Gary really got off track. Things were confused for a few days, but moved along rather nicely after that.

What we believe to be a logical, perhaps necessary sequence of tasks may not be logical or necessary at all. Addition and subtraction do not have to be mastered before multiplication. Two stops for each hand is not necessarily easier for a child with physical disabilities than one stop for both hands. Send out the scouts! Take the point!

Work at the very highest level of the curriculum possible. If a child can progress on a mixed sheet of math problems containing all types of problems, then it really doesn’t matter whether addition comes before multiplication — it can all come at once. If a child can work out his or her own task analysis and achieve the desired end (like Gary getting to the toilet), then it really doesn’t matter whether it is the way we would choose to do it. If a fifth grader with learning disabilities can make progress by reading from a fifth grade book, even though the tests say a second grade reader would be “better,” then let the little learner-rebel go!

Is there such a thing as a leap too big? An “all mixed” math probe might confuse a child, or one type of problem might be consistently skipped and, therefore, never practiced. A learner with severe disabilities may need at least some guidance in figuring out a reasonable task sequence. A fourth grader child might still need drill in some particularly difficult blends in order to make the
best progress possible in the fourth grade reader. Perhaps, but we don’t want to slow the learner’s progress, either.

If it does seem more reasonable to work on certain sub-skills in a definite sequence, there are at least two ways we might still avoid a lock step, “do it my way, one step at a time” catastrophe.

First, although we might be working at an intermediate level of the curriculum, we can still “scout ahead.” Work on blends, assess on blends, then assess again using the fifth grade reader, every day. When the ALPs (Advanced Learning-Probes) indicate that blending errors are dropping out of fifth grade reading, stop working on blends in isolation. Feedback for the few remaining errors can continue in the context of the fifth grade reader. Progress on the “leap up” ALPs assessments is the most appropriate and functional aim for intermediate skill instructional programs.

Second, if it simply seems unmanageable to probe all skills in a sequence at the same time (i.e., the ALPs are too big), then at least move through cumulatively dependent sub-steps in the sequence as quickly as possible. Get to the highest level possible as quickly as possible, and then begin to build “terminal” fluency.

This strategy makes sense. However, with almost everything, there are a few caveats. An all out “charge up the curriculum” can leave one’s flanks and rear exposed. Not all skills are strictly hierarchical, so there is sometimes a danger of leaving something behind that won’t be incorporated into what appear to be related, higher-level skills. Judy’s inventory demonstrates the wisdom of sending out flankers and a rear guard to avoid that problem (see Chart 9).

Judy is reading reasonably well in her grade level text. She’s just a bit below aim, though, so just to be safe, send out the flankers and check the perimeters.

We’ve found a weak spot. Her blending skills are almost non-existent. Judy’s teacher has to decide whether it’s wise to try and turn a reasonably fluent sight-word reader into a phonics reader. That would require a controlled withdrawal to a lower frequency in order to regroup, but it might make all the difference when the final assault on functionality begins. A tough decision. If Judy’s teacher had not sent out flankers to check all perimeters, however, the possibility that a controlled withdrawal might be advisable would never have been discovered.

“Commander, Commander, there’s another report from the flankers.” Judy’s math skill defenses are even weaker. She’s certainly a long way from fluency in addition and subtraction, but she’s not exactly out of the ballpark either. Now take a look at the flanker’s report concerning her skill in writing numbers-in-order. “Judy, here are three numbers — 9, 13, and 2. I want you to write the smallest number first, then the next number, and then the largest number.” Judy can add, but our assessment results show that Judy does not know that 9 is bigger than 2. If we had charged blindly on and assessed only mixed addition facts, we might never have found out that Judy had memorized the answers to a few basic facts, but had no idea what the answer meant.

It’s time to regroup! Don’t withdraw, but reinforce the weak flank! Continue the drive on Judy’s higher math skills, but begin additional work on her more rudimentary number concepts, then leap ahead again!

Work at the highest possible level of the curriculum. Move from one step in a sequence to another as soon as possible, but keep looking back (rear guard) and around (flankers) at related skills. Unless it is very obvious that all relevant skills are completely contained and adequately assessed in higher-level material, make sure those other skills get the attention they deserve. If necessary, work with high and low skills at the same time.

The second caveat concerning leap-aheads comes from a notion shared by Young Eric (Haughton, 1980). It may be advisable to have the learner practice high frequencies — get used to the “feel” of fluency, as it were. If constant leap-ups produce rapid movement through the curriculum and high rates of progress, but low frequencies, we may be teaching our pupils that it’s o.k. to be SLOW (Slothful, Lethargic, and Obviously Worthless). We must remember that there are several forms of “competition,” and that FAST (Fluency At Skill-instruction Termination) will ultimately determine whether the skill will prove useful to the Learner. The battle is joined.

The simplest way to reach the end of a curriculum is to begin at the end. Teach the final, ultimate performance from the start. If that does not seem possible, then at least send out the scouts. Provide instruction for whatever intermediate steps seem appropriate, but keep trying to gain the vantage of the ALPs (Advanced-Learning-Probes) to assess the impact of your instruction on higher-level skills.

Leap ahead in the curriculum as quickly as possible, even if the fluency achieved at intermediate steps is less than what you know will be necessary in the long run. As you leap ahead, however, protect your flanks and establish a rear guard to make sure that all related skills are brought to a level that will make them useful after instruction is terminated. Blind faith that skills are truly “hierarchical” or “prerequisite” to one another in sequence is rarely justified. Look around, behind, and ahead.

In the next episode, Uncle Owen’s diary draws to a close as he attempts to summarize his thoughts and describe the “Uneasy Truce” which appears to have been established between the Learner Rebels and the Evil Normie Empire.
Episode V: Uneasy Truce

In previous episodes we met a host of Learner Rebels and Learner Knights as they struggled to overthrow the bonds of the Evil Normie Empire. Now we turn to the final pages of Uncle Owen’s chronicle as he reviews what has been revealed to him. It seems that our dreams of defeating forever the Evil Normie Empire must wait for another age. For the moment, it seems that we must content ourselves with certain gains and an uneasy truce.

Eventually, instruction in the formal sense must stop. Artificial support for skill development will no longer be available. That does not mean that learning must stop, but the learner must be able to function independently, or the skill will simply cease to exist in any meaningful sense of the word.

I have already explored the notion of using traditional peer standards as performance aims and found them wanting (see Episode I, The Deathstar). While it is true that achieving normal levels of performance may facilitate acceptance into peer groups and provide useful skills for at least some post-school environments, it seems more often the case that other forms of competition will determine the immediate and eventual usefulness of the skills we teach.

In some cases, the skills that we would have our Learner Rebels master are in direct competition with other skills already in the Learner’s behavioral repertoire (see Episode II, Return of the Learner). If we are to prevent the Learner from slipping back into old habits once instruction is terminated, we must make it much easier for the learner to use the new skill than the old. That can often be accomplished by setting the fluency aims for the new skill at a level x1.5 to x2.0 (one-and-one-half to two-times) higher than the fluency with which the learner is able to use the old, less desirable skill.

“Managers” in the Learner’s world might also present a form of competition (see Episode III, The Normie Empire Strikes Back). If the learner lacks fluency, managers might simply become impatient and complete the task themselves or otherwise prevent the Learner from attempting the skill. Generally, managers can only be expected to allow a learner to perform a skill if it is age appropriate or expected, takes little of the manager’s time, lessens the manager’s workload, does not compete with other demands on the manager’s time, or is for some reason of special worth to the manager. If demonstration of the skill depends in some way on manager cooperation, then performance standards for the new skill must take managerial patience and demands into consideration.

If a skill has been brought to a level where it competes effectively with any necessary peer standards, other behaviors in the learner’s repertoire, and managerial patience and demands, then one might reasonably expect the skill to be used if and when it is appropriate to do so. However, the anticipated frequency of use should also be considered when establishing fluency standards.

If the skill is not likely to be used often, high fluency aims should be established before formal instruction is terminated (see Episode I, The Deathstar). If the skill will be used often, then relatively low aims may suffice. Even if those aims represent a fluency lower than one would eventually like to achieve with the skill, frequent use is likely to provide the practice necessary to build that additional fluency.

This is really the difference between retention and maintenance. If a skill is unlikely to be used very often, even if it is potentially very important, we need a sort of “performance reserve” to keep the skill alive over periods of disuse. If the skill will be immediately useful to the learner, and used often, much lower levels of performance skill might be sufficient to maintain and continue the development of the skill.

“Spelling” is a common example of a retention problem. Knowing how to choose and spell “just the right word” can be very important in written communication, but many of those “right words” are only rarely appropriate. How often is it necessary to know that “sophisticated” means “impure or corrupt” or “pertaining to false logic,” let alone how to spell it? Not often, but when it is, it’s nice to remember. Initial attempts to learn the definition of the word and to spell it correctly can be artificially supported through verbal encouragement and formal spelling assessments. Once the spelling test is past, however, we can’t count on naturally occurring opportunities to maintain and continue to improve the skill. It’s important, therefore, to bring that skill to a high level of proficiency before we consider the learner to have demonstrated a potentially useful skill. Fortunately, there’s ample evidence that establishing high fluency aims for such skills can effectively enhance maintenance far beyond what we might expect from accuracy-only aims (c.f., Berquam, 1981b; Binder, 1981). If we can bring a learner to a place where she can demonstrate the skill quickly and easily, not just accurately, there’s a much better chance that the skill will still be there when she needs it.

Keeping a skill alive is a matter of maintenance if the skill is used regularly. Of course, that means that it must be at least minimally functional or useful under whatever conditions prevail at the time. Regular use, however, will ensure that the skill will remain in the learner’s behavioral repertoire and, usually,
continue improve in effectiveness and/or efficiency without continued formal instruction.

“Walking” is a good example. When a child first begins to walk he is not very efficient. He falls a lot and has difficulty traversing long distances. There is usually ample reinforcement for initial attempts to walk, however, including a new perspective on life (he can see new and interesting things) and the willing encouragement of parents and others. We can usually withdraw artificial supports for walking (e.g., holding his hand) pretty early in the development of the skill, and still expect him to maintain and improve his skill. High “terminal proficiency” is not usually a requirement for stopping formal instruction with such skills.

Can a learner really continue to develop fluency without our guidance? Given a chance and a reason, Christina did just that (see Chart 9).

Carolyn Kaiser wanted to practice her Precision Teaching and was offered the chance to work with Christina, a cute, cooperative four year old Down Syndrome Learner-Rebel. Christina’s teachers were already having good success with all of her IEP objectives and did not particularly want to take a risk that Carolyn might mess things up. On the other hand, they didn’t want to take

Christina’s valuable time to work on some totally irrelevant skill, so they compromised by selecting a skill that should have been a good year in advance of Christina’s “developmental age” — naming three basic colors. If Christina made progress, fine. If not, well, that was to be expected. Carolyn liked challenges, so as long as Christina didn’t get frustrated, everything would be fine.

Following 10-12 minutes of instruction on the first day, Christina was assessed for 30 seconds and failed to name a single color-circle correctly. Oh well, it was a year early to develop that skill. Carolyn still liked challenges. She hoped Christina felt the same way.

The next day, following 10-12 minutes of instruction, Christina achieved a correct frequency of 6 per minute over a 30 second timing, but error frequency was higher.

After seven days and a “jaws-crossover,” Christina seemed to peak out at 20 corrects per

8 Ogden Lindsley and Henri Sokolove tried having young learners describe their instructional progress by giving names to the pattern of their correct and error performances over time. “Jaws crossover” was the name they gave to a learning picture in which correct frequencies
There appear to be different "phases of learning" according to some rules (White and Haring, 1982). This is a good performance, but still too slow to be sure that Christina will remember the names very long, especially considering the anticipated frequency of skill use. This is too soon to let Christina go her own way. The "rules" would suggest a change in consequences to make continued practice worthwhile.

Learner-Rebels don’t always read the professional literature. They might not know about the rules. Carolyn decided to chance it. She would place faith in the Learner-Force and let Christina go. For a little insurance, however, she also arranged things to make continued (independent) practice worthwhile. She moved the assessment to the beginning of the session (it used to be at the end, after 10-12 minutes of instruction) and told Christina that if she practiced on her own and met her daily aim, there wouldn’t be any instruction. The eventual aim was 40 per minute — x2 Christina’s best performance to date — but all Carolyn had in mind was steady progress up the chart. If Christina could just make progress each day, she’d buy her way out of instruction. Perhaps Christina didn’t understand. Perhaps she thought

started out higher than errors, but quickly crossed over to corrects-above-errors. The picture reminded the children of a shark's jaws. Other pictures included "take off" (slow progress in corrects at first, followed by rapid gains) and "dive" (high frequencies suddenly falling off to low frequencies). Having learners name their performance patterns added interest and encouraged them to evaluate not just how well they were performing, but how quickly they were improving.

If the learner should use the skill every day, fine out if it is being used when the learner is not specifically directed to do so. Does the reader choose to read when there are other things she might do? During free time, how often does the reader read instead of playing pool? At home, does the learner ask what’s on TV or simply read the TV guide? Does the learner buy or subscribe to any magazine that isn’t all pictures? Does the learner read? If not, it may simply be a matter of "taste" (playing video games can be nice too), but it

she had to reach all the way to 40 per minute in order to avoid instruction. In any event, on the first day following the change in plan Christina reached 38 per minute with no errors. The same performance was recorded on the second day. On the third day she reached her final aim without instruction. Carolyn responded appropriately by moving quickly on to the next level in the curriculum (more colors), a level supposedly a year and a half above Christina’s "developmental age."

Can kids learn on their own? They can, if they have a reason.

The best reasons are provided by working with a skill that will be immediately useful to the learner in daily life. Even if you find it necessary to work with somewhat more “abstract” skills, learners can still learn on their own if the consequences for doing so are meaningful. For Christina, those consequences were the repeated opportunities to buy her way out of 10-12 minutes of instruction.

One should never place blind faith in learner progress, however. Scouts should be employed to assess the use of a skill outside instruction. Flankers should be deployed to assess the development of important related skills not being directly taught. Rear Guard assessments should be conducted to make sure skills for which direct instruction has been terminated are being maintained and, if necessary, are continuing to develop in fluency (see Episode IV: Scouts, Flankers and Rear Guard).

If you have reached your performance aim for CYC words in isolation, but climb the ALPs (Advanced-Learning-Probes) only to find the learner is still making mistakes with CVC words within the context of the grade-level reader, then the learner is still not using the skill you tried to teach. Raise your aims. Provide the learner with the fluency which will make the skill easier to use and more functional.

Don’t just discontinue instruction in dressing skills when the learner meets the standards you agreed upon with the parents. Call the parents. Is the learner dressing himself in the home? If not, raise the standards to compete more effectively with whatever is holding the learner back, or at least encourage parents to allow their son to try on his own.

If the learner should use the skill every day, fine out if it is being used when the learner is not specifically directed to do so. Does the reader choose to read when there are other things she might do? During free time, how often does the learner read instead of playing pool? At home, does the learner ask what’s on TV or simply read the TV guide? Does the learner buy or subscribe to any magazine that isn’t all pictures? Does the learner read? If not, it may simply be a matter of “taste” (playing video games can be nice too), but it
may also be a matter of dysfluency. Try raising the aims.

Once a learner reaches aim in “takes bite with a spoon,” what happens when you walk away? If fingers come into play with food more appropriately eaten with a spoon, then the aim for spoon-use was too low.

Take away the constraints. Don’t tell the learner what to do. If the behavior you tried to teach is still used, then the performance aim was adequate to provide a service for the learner, at least for the time being. You will have at least reached that level of “independent practice” which Young Eric described (Haughton, 1980), and you might serve the learner’s needs better by moving on to another skill.

Indeed, one might be well advised to conduct USE(Undirected Skill Employment) probes throughout a program. Set a few seconds aside each day to see whether the learner chooses to use a skill even when not specifically directed to do so. When unprompted use of the skill is demonstrated, perhaps it is time to move on to teach another skill. Success on USE probes can become the ultimate aim, with specific frequency aims just temporary guide posts to see us on our way. Of course, a few rear guard and flanker probes from time to time might also be wise, just to make sure.

What’s the bottom line?
Place faith in the Learner Force whenever possible.

However, don’t abdicate all responsibility for setting at least minimal performance standards which will allow the learner to:

- be **A**ge appropriate,
- **L**ittle of the manager’s time,
- **L**essen the manager’s workload,
- not compete with other demands on the manager,
- or be of special **W**orth to the manager.

Generally, for performance standards to become AIMS, they must provide:

- **C**ompetition with other skills in the learner’s own behavioral repertoire,
- **M**anager expectations and patience,
- and, when appropriate, **P**eer performances. Generally, to enable the learner to be **E**ffective in achieving those ends, we should **T**arget the highest level of **E**fficiency possible.

In other words, our AIMS must COMPETE. Aim **h**igh!

In addition, whenever possible allow the learner to provide for his or her own practice and to develop necessary additional fluency independently. Keep up the rear guard, flanking and USE probes, though, just to make sure it really happens.

Am I getting closer, Eric? Will I ever truly understand the mysteries of the Learner-Force?

**Postscript**

Through this tongue-in-cheek adventure I have attempted to share some of my own opinions concerning performance standards. Over the years my opinions have become increasingly similar to those who have preceded me in the quest for the ever elusive Learner-Force, including of course, Eric Haughton (Young Eric, Learner Knight, the man in search of the seventh cycle) and Ogden Lindsley (Ogi-Wan Sixcycle, the original Learner Knight). To them and so many others I owe a great debt. Perhaps someday I will finally catch up. Still, I might have misrepresented some of their opinions in this series, due in part to my own misunderstandings and the sad lack of “hard data” concerning the issue of performance aims.

I suppose, if I have an overriding opinion on the matter, it would be simply that there are no sure answers, no truly functional aims set in stone, unchanging for time immemorial. Rather, I believe that the frequencies that will make performance aims functional will rise and fall with the tide of curriculum development, the changing demands of the world in which all Learner Rebels must live, and our own talents and priorities as teacher/managers. We must continue forever the evaluation and evolution of our standards.

Most importantly, though, I firmly believe that what will prove functional for one learner might prove dysfunctional for another. We could simply set aims so high that they would ensure functional fluency for virtually any learner, but that might prove counter-productive to rapid movement through curricula. I believe that we must look to the learner’s own behavioral repertoire, manager patience and expectations, and at least occasionally, the learner’s peer group for guidance. We must document the functionality of an individual’s aims by probing outside the instructional situation and after instruction has been terminated to determine if the skill is actually being used.

*May the Learner Force be with us all.*

**References**

Berquam, E. M. (1981a) *The relationship between frequency of response and retention on a paired*


Binder, C. (1981). Treatment effects of timings: frequency and endurance. A panel presentation, K. R. Johnson (chair), Seventh Annual Meeting of the Association for Behavior Analysis, Milwaukee, WI.


Clement, R. (1978). Spring-Fall retention scores on precise monthly assessments. Unpublished manuscript, Great Falls Public Schools, Great Falls, MT.


Rae-Johnson Personal Communication.


