Aim*Stars
Finding Performance Aims that WORK

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What makes a good aim?
☐ It's performance that ensures
  ✓ Quality
  ✓ Usefulness
  ✓ Independence
  ...and that the behavior will...
  ✓ Choose
  ...to use the behavior; and...
  ✓ Keep
  ...using the behavior when appropriate.

It's not enough to be accurate...

We need ...
Quality
Usefulness
Independence
Choose
Keep

A Little Experiment
☐ Write your name
  ✓ Like you would sign a check
  ✓ Now at the pace I give you

More about Quality
☐ Mixed single-digit math facts
  ✓ Just "write"

1081 EDSPE 510 Students (Precision Teaching)
More about Quality

- Mixed single-digit math facts
- Just "write"
- Write with least preferred hand

![Image: 1981 EDSP 510 Students (Precision Teaching)]

...and then there's
Carl's spelling...

Robbing fluency...

...steals QUALITY!

Postscripts on Quality

- I mean "quality" in the broadest sense
- Higher frequencies are likely to change quality, but...
- Not necessarily "improve" all aspects
  of a performance
  - Black vs. White, not more "intellect" and "intellectual"
- You have to decide which "qualities" you value most

If "Memory" Serves ...

- Qualitative changes emerging
  with changes in frequency suggest
- Separate behaviors, shaped by
different contingencies &
circumstances
- Revising "circumstances" can
  reveal the "forgotten" behavior

In other words

- Achieving higher frequencies
  might not be a matter of "refining"
  an old behavior, but rather...
- Learning new behaviors at new
  frequencies to meet different
  needs

How do we know if a skill
will be USEFUL? (qUick)

- It must have...
  - Direct APPLICATION in the
    learner's world
  - Provide access to personally
    REINFORCING events
  - COMPETE successfully with
    alternatives & barriers
Some factors affecting usefulness

- Is the skill supported/reinforced?
  - Artifically supported: E.g., instructionally, as a building block for the next step in a curriculum
  - Naturally supported: as a useful tool in "life"
- If "outside instruction", does the learner have a chance to use the skill?
  - "If I teach, will you ALLOW?" (Rob Homer)

Independence (quick)

- Independence from artificial supports
  - Fading control to "natural" supports
  - But what's "natural" might differ between skill use inside and outside instruction
- Ultimately, we want independent application within the "real world"
- With common perception of acceptable performance by "critical observers"

"Real World" Evaluations

- Different criteria?
  - Loose behavioral definitions of "form"
  - Focus on overall outcome (critical effect)
  - Special supports
- Different opportunities?
  - Special attention, constructed opportunities
  - Natural opportunities
- Different data?
  - Perceptions of "critical observers"
    - General, minimally guided, then...
    - Progressively more explicitly evaluated

What makes us CHOOSE a behavior? (quick)

- Usefulness, certainly, but also...
- Being ALLOWED to use the skill

To be allowed, a behavior must...

- Be appropriate
- Lessen the manager's workload
- Take less of the manager's time, and
- Compete effectively with other behaviors
- Or be of special worth to the manager
Competitive Examples
- "See-write" answers to math problems
  - "See-count-write"
  - "See-punch buttons-write"
- "Choose to read"
  - Ask someone
  - Do something else during free time
- "Take steps to walk"
  - "Scoots" or "cruises"
- Doing something for yourself
  - Wait for someone to do it for you
  - Get along without it

Keeping the Skill (quickK)
- Retention
  - Keeping a skill over protracted periods on non-use
  - Often helped by "super-frequencies" or "uniqueness"

- Maintenance
  - Keeping / improving a skill that is frequently used
  - Aided by immediate usefulness and naturally effective supports
  - Continued use provides practice, leading to improvements in the skill
    - So it might be possible to terminate formal instruction before "terminal proficiency" is reached

- Caveats in evaluating outcomes
  - "Super-Fluency"
    - Might result in disproportionate losses in "absolute" performance over periods of disuse (retention)
    - Although "accuracy" and "relative fluency" might remain high
  - "Disfluent", minimally useful skills
    - Might retain "absolute" levels of performance over long periods of non-use (e.g., hunt-and-pack typing)

Assessing QUICK?
- Follow the learner around in the real world
  - Observe / Ask
  - Takes time (ours & other folks')
  - Tough to do on a daily basis
- Need a tentative instructional aim
- How do we set an initial aim to guide our instructional ship?

Being "typical"
- Perhaps if we can match "norms" or what typical folks do, then we'll be OK
- Unfortunately...
  - Typical folks are often not good enough
  - Sometimes typical performance simply isn't possible, but useful behavior is
- We need to consider the individual's needs and abilities within the context of his or her life
Needs to be BETTER than typical

 Initial Assessment
 Chris: assessment of the balance & strength of legs & feet.
 - Hop is 1 of best feet. Can lift that should be up.
 - Both should be up.

 Instructional Program
 Chris: hops on left foot

 Balance Achieved, even though less than "normal"!!
 Chris: hops on right foot

What if it's not possible to build an effective competing behavior?
- Artificially manipulate contingencies to reduce the effectiveness of the competing behavior
- Use strong contingencies to build the desired behavior, then
- Fade the artificial contingencies, if possible
- If necessary, use "indiscriminate contingencies"
A bit more about frequencies

- In the beginning...
  - Skinner turned to frequency (rate) as the “most sensitive measure of learning”
  - That's held true as we've moved from the laboratory to the classroom to the real world

- BUT...
  - Skinner's "discriminative stimuli" were essentially constant or one-shot, and immediately discriminable
  - Skinner's "operant" was selected to require virtually no time
  - Requires virtually no energy
  - So "overall count" divided by "overall assessment time" makes sense
  - However, those conditions are often not true during instruction or the real world

In OUR world

- Stimuli are often highly transitory and/or interactive
- Behaviors can consume time and energy (often a great deal of each)
- "Count divided by time" still makes sense, but
- "Time" might need to be redefined

Time-Based Options

- Frequency
  - Count = Time
  - Useful in evaluating overall "speed" of production
- Duration
  - Time from start-to-end of behavior
  - Useful in evaluating "time consumption" or "endurance", at least of episodes, of single or low-count behaviors
- Latency
  - Time between opportunity and start of response
  - Useful in evaluating "compliance" or "certainty" in low-count and/or strictly paced behavior

Variations on Frequency

- Traditional frequency
  - Total count = assessment time
- Frequency-to-Do
  - Cumulative count = cumulative duration
  - If count = "1", Frequency-to-Do = recent flow (single-movement frequency)
- Frequency-to-Start
  - Cumulative count = cumulative latency
- More variations
  - Frequency to start & do = count x (latency-duration)
  - Frequency to start again = count x (time from end of one response to beginning of next response)
The advantage of always computing frequencies

- Different kinds of "time" are still considered, but
- The basic meaning of the data remains the same
  - Higher frequencies mean getting more behavior in a given period (or the same behavior in a smaller period)
  - "Up" the chart is always "faster"
  - "Nothing" is always below the record floor

Beginnings

- Where to begin?
  - Application
    - Evaluate current skills in use
    - Are alternatives exist?
  - Inventories
    - Test the whole curriculum
    - Begin instruction at highest possible level
    - Fill in the gaps as necessary

End as Soon as Possible

- If you can't teach at the end of the curriculum
- At least use ALPs (Advanced Learning Probes) to see how quickly you can get there

And speaking of endings

- We want "fluency," but...
- How do we define "fluency?"
  - By it's "form?"
    - Speed and accuracy
    - Easy, no hesitation...
  - By it's "outcomes?" (function)
    - REAPS, RESA, RESAA...

What if we had used ALPs all along?

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- Application
  - Evaluate current skills in use
  - Do alternatives exist?
- Inventories
  - Test the whole curriculum
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RESSA

- Retention
  - "Keeping a skill" (quick)
  - Retention
    - Keeping a skill over prolonged periods of non-use
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  - Maintenance
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Endurance
- Sustained performances over prolonged periods of continuous use
- Influenced by "physical" and "cognitive" energy required
- How long is "long enough in real world?"
- Reinforcement can be critical

Stability
- Sustained, low-bounce performances despite "distractions" or "adverse" conditions
- Considerations similar to "endurance"
- Too much "stability" makes skills resistant to adaptation & further development

Application (stimulus generalization)
- Using the skill beyond immediate instructional conditions
- Need "new" opportunities & conditions
- Highly influenced by instructional conditions

Adduction (response induction)
- Modifying/re-sequencing/re-combining skills to meet new/revised conditions
- Least disturbed behavioral outcomes, but properly facilitated by changing situations where:
  - Desired outcome/efficacy can be recognized by the learner.
  - Direct application of existing skills/skill-sequences will not work, and
  - Learner can "self-evaluate" attempts to find solution

But the bottom line is ...
- Aims should prepare a learner to USE a skill
  - Instructionally
  - In the "real world"
- "Standard" (empirically derived) aims might be a good start
- But the "learners know best", so ...
  - Evaluate where/how the learner will actually USE the skill
  - Probe for use early on
  - Adjust aims to meet individual needs and to maximize progress

I can’t resist a final acronym
- A USEful aim is one that ensures the application of a skill will achieve
  - Utility,
  - Service, and
  - Efficiency

There's more...
  http://courses.washington.edu/edspe510/
- Click on the "readings" tab, and scroll down to "Aim*Star Wars"
- It'll download as a PDF file