How Do Disabilities Affect Learning?
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Audience: PK-8 teachers/teacher leaders, High school teachers/teacher leaders
Participants will:
identify four general aspects of the learning process that can be impacted by a disability
identify general principles for addressing these issues in any learning environment.

We know, in some cases by definition and in others by our teaching experience, that disabilities affect learning - but how? We will review four underlying processes of learning, and how various disabilities may impact them. A clear framework can help us to quickly conceptualize why a particular student may be struggling with a skill or concept. This knowledge will enable us to choose an effective method for supporting that student in the learning process.
Our Goals:

• Identify a basic definition of learning.

• Consider how each of the first three steps in the learning process might be impacted by various disabilities.

• Add the fourth step in the learning process and consider it from the perspective of students with disabilities.

• Create and discuss examples of how this information can be applied in the classroom.
Discuss what “Learning” means to you.
Learning =

The search for

and

acquisition of

meaning.
BIRTH → IN BETWEEN → DEATH STUFF

THAT'S IT?
Aspects of Learning

• **Sensory** – Is the student physically experiencing the event in a way that will enhance learning?

• **Prior Knowledge** – Is the student bringing enough prior knowledge to the event to enhance learning?

• **Emotional / Social** – Is the student in an emotional state likely to enhance learning?

• **Engagement** – Is this student participating in the event in a meaningful way?

• **Processing** (internal) – Is the student able to internally manipulate the “information” in a way to make it useful and meaningful to them?

• **Linking** (internal) – Is the student able to connect this new information/event to prior knowledge?

• **Output** – Is the student able to demonstrate that learning has occurred? Can the student apply what they have learned?

• **Retention** – Is the student able to retain key aspects of the learning event, so as to build upon them in the future?
concept mapping

- psychology
  - human learning
    - is based on
      - assimilation theory
        - leads to
          - meaningful learning
            - by
              - prior knowledge
              - meaningful material
              - learner's choice
            - leads to
              - constructivism
                - by integrating
                  - thinking
                  - feeling
                  - acting
  - epistemology
    - human knowledge creation
      - is based on
Why do we need to know how to apply theory?

• Little or no research exists

• On-the-spot problem-solving

• Teach students themselves about meta-cognition and why they might be “stuck.”

• Build efficient and effective learning environments (“Implicit Learning”)

• Help parents understand their child’s learning
Example:

Theoretical Principles to Guide the Study of the Teaching of Adjectives to Children who Struggle with Word Learning by Ricks and Alt.
We will use the learning of adjectives as an example, because it applies to all grade levels and all subject areas.
“Effulgent”

• Raise your hand if this is a word that you use in your speech or writing.

• Raise your hand if you could use this word in a sentence, even if you are unlikely to ever do so.

• Raise your hand if you believe you could guess the meaning of this word if given four choices of definitions.

• Raise your hand if you feel you have never seen or heard this word before.
First three steps:

Input → Processing → Output

Observe → Analyze → Understand
Input
- Sensory Input
- Perception
- Observing/Engaging

Processing
- Memory (Accessing prior Learning)
- Linking
- Analyzing (Deconstructing)

Output
- Physical – voluntary and involuntary
- Emotional – voluntary and involuntary
- Mental (internal thoughts and understanding)
- Understanding
I. Input

- Vestibular
- Proprioceptive
I.

Input
THINKING...
(Please be patient)
I. Perception

It is really confusing!!!
It is really confusing!!!
Do you remember the word I asked you about in the beginning?

- How many repetitions (input) does the average student need in order to recall a word?
  10 to 13

- How many repetitions (input) does a student with a language delay (or in older students, certain types of learning disabilities) require?
  27+
One important implication:

When there are difficulties with input, it is critical that the student take in information correctly.

Homework?
Using audio books?
How much of our sensory and perceptual input is volitional?
**Input:** implications for practice:

1. Be careful about assuming volition.

2. Consider whether the “input error” is at the sensory or perceptual level.

3. Use *contrast* as often as possible – example “Frayer Model.”
   - includes figure-ground contrast.

The Frayer Model

Definition (in own words)          Characteristics

Examples (from own life)          Non-examples (from own life)

WORD
“Effugent”

Models (from my own life)
• My childhood violin teacher.
• St. John Baptiste de LaSalle’s desire for his teachers.
• A rainbow I saw recently.

Non-models (from my own life)
• Many tweets I read.
• The dying lightbulb in my garage.
• Congress – at the moment.
Using what research does exist...

Likely to produce less successful “input”:
• That’s effluent!
• The crotle was not effulgent.
• Effluent means...

Likely to produce more successful “Input”:
• I hope I am an effluent teacher.
• It was an effluent super-nova.
• These items are effluent. What do you think it means?
Examples of “Input” supports:

• Design efficient, “dense” lessons
• Prepare the learning environment to maximize engagement
  • Flexible seating
  • Opportunities for movement
  • Time-of-day
• Offer multi-sensory options for input
• Observe possible changes in vision, hearing, alertness, fatigue, etc.
• Maximize “Implicit Learning”
• Maximize contrast.
• Use variability, not just repetition.
In my opinion, these “input” supports are over-used:

- Assigning extra practice
- Referring to Support Services (including tutoring.)
Discuss one implication of “input” for your discipline:
“Efflugent”

1. What does this word sound like to you?

• A flue vent

2. What is the dictionary meaning of this word?

Shining brightly; radiant, (of a person or their expression) emanating joy or goodness.
II. Processing

- Memory
- Linking
- Analyzing
II. Processing

Working memory can be an enormous factor in processing for many students with a wide variety of learning challenges.

Also – word retrieval, accessing prior knowledge.

“Emotional short-circuiting.”
Working Memory:

• Definition: *memory that involves storing, focusing attention on, and manipulating information for a relatively short period of time.* – Merriam – Webster.
Processing supports:

Begin with support of working memory:

1. In older students, teach them what it is and how it impacts them personally.
2. Always leave a sample available for comparison.
3. Give examples of how you personally support your own working memory.
4. Teach “chunking”, visualization, and other memory supports.
Implications

Be careful about novel stimuli. Example math: Typical to change the numbers and keep the pattern the same in an effort to help children discover and practice the pattern. I have had significant success in having students *re-work the same problem, without changing the numbers.* (Analogous to dance steps where you keep the music the same vs. changing the music.)
Other Processing Supports:

• Check for prior knowledge
• Use discovery method by contrast, and providing multiple examples
• “Bootstrapping”: ‘Twas Brillig and the slithy tove.
• Because of delays, children may be learning material when it is not developmentally appropriate (learning to tie shoes as a high school freshmen, for example.) Important to always explain and give a context, to deal with shame.
• Scaffolding
“Efflugent”

1. What does this word sound like to you?

2. Shining brightly; radiant, (of a person or their expression) emanating joy or goodness.

3. Draw the meaning of the word into your original picture:

I am so happy I installed this properly and did not fall off the roof!!!!!
What does this tell us about the nature of learning?

Learning involves:

Experiences
Prior Knowledge
Perception
Gestalt or Holistic understanding
• What will the student *need to do* with this information?
Be careful!

III.

Output

Since “Output” is the last step in the process, it is easy to make the mistake of thinking that “output” is the problem, when in fact the problem may have occurred much earlier in the learning process.

Output can be symptom, in other words, not the major issue.
Be careful!

III.

Output

True output problems:

• Muscle weakness causes speech mispronunciation or difficulty writing.
• Student can speak and read at developmentally appropriate level, but not write.
• Aphasia
• Stuttering/Stammering
• Word Retrieval
Problems with output cause \textit{frustration}!
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4th step...?
How the student(s) with a disability affect(s) the learning of other students and the teacher.
What are some experiences you have had with this dynamic?
Students with disabilities in the classroom

**Positives**
- Encourages multiple methods, benefiting all.
- Offers learning about and friendship with a wide variety of people.
- Teaches that life is not “one-size-fits-all”
- Keeps families together

**Concerns**
- Time
- Will a vulnerable student be hurt?
- Teachers may lack confidence in their own abilities
- “Sitting in the classroom” is not inclusion
- Stressful for the teacher?