Building Fluency with Precision Teaching

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Morningside Academy

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About Morningside Academy

- Laboratory school founded in 1980 in Seattle, WA
  - Elementary & middle school students catch up and get ahead
  - "Forgotten 40%" (30-50% est.) in general education & mild special ed
  - Typical and near-typical children
    - Tier 2 RTI & MTSS programs, "compensatory ed"
  - Diagnosed ADHD, mild LD, executive function problems, or just plain old behind & struggling
  - Average to above average IQs
  - Main problem is academics, *not* social-behavioral
    - Small percentage have poor social relations but these are largely solved by focusing on academic problems.

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About Morningside

- We all know adults who were part of the forgotten 40%! Maybe you were one of them.
- Students typically enroll for 2 to 4 years to catch up and get ahead
- Address deficiencies by increasing intensity and explicitness of instruction in
  - Basic academics
    - reading, writing, mathematics
  - Learning and executive functioning skills
    - goal setting, listening, noticing, participating, reasoning, thinking, studying, and organizing
  - Performance skills
    - performing tasks in a timely, accurate, organized manner without disrupting others or causing oneself undue grief

3

Only evidence and research–based, best practices

- Research-based technologies, e.g.,
  - Direct Instruction
  - Precision Teaching
  - Thinking Aloud Problem Solving (TAPS)
- Applied behavior analysis procedures, e.g.,
  - Good Behavior Game
  - TAG teaching
  - Daily support card/point system
- Assessment procedures, e.g.,
  - Curriculum Based Measurement (CBM)
  - homogeneous achievement grouping

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About Morningside Academy

- In-house instructional design through Morningside Press
  - Instructional materials in reading, writing, mathematics based on explicit instruction principles
    - e.g., *Algebra for Beginners, Writing Persuasive Compositions*
  - Stand-alone fluency building materials such as *Morningside Math Facts,* and *Morningside Computation Fluency*
  - Supplementary fluency building materials to be used with other commercially available materials such as *Reading Mastery* and *REWARDS Writing*

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The Morningside Model of Generative Instruction (MMGI)

- Teaching is organized into 3 phases
  - Instruction
  - Practice to fluency, with celeration
  - Application to real-world activities
  - Opportunities throughout for probing and prompting re-combinations of skills, concepts, and principles that we have already taught, *without further teaching*
    - **generative responding**
- We call the amalgam of research-based best practices, and the organizational structure within which they occur, the **Morningside Model of Generative Instruction (MMGI)**
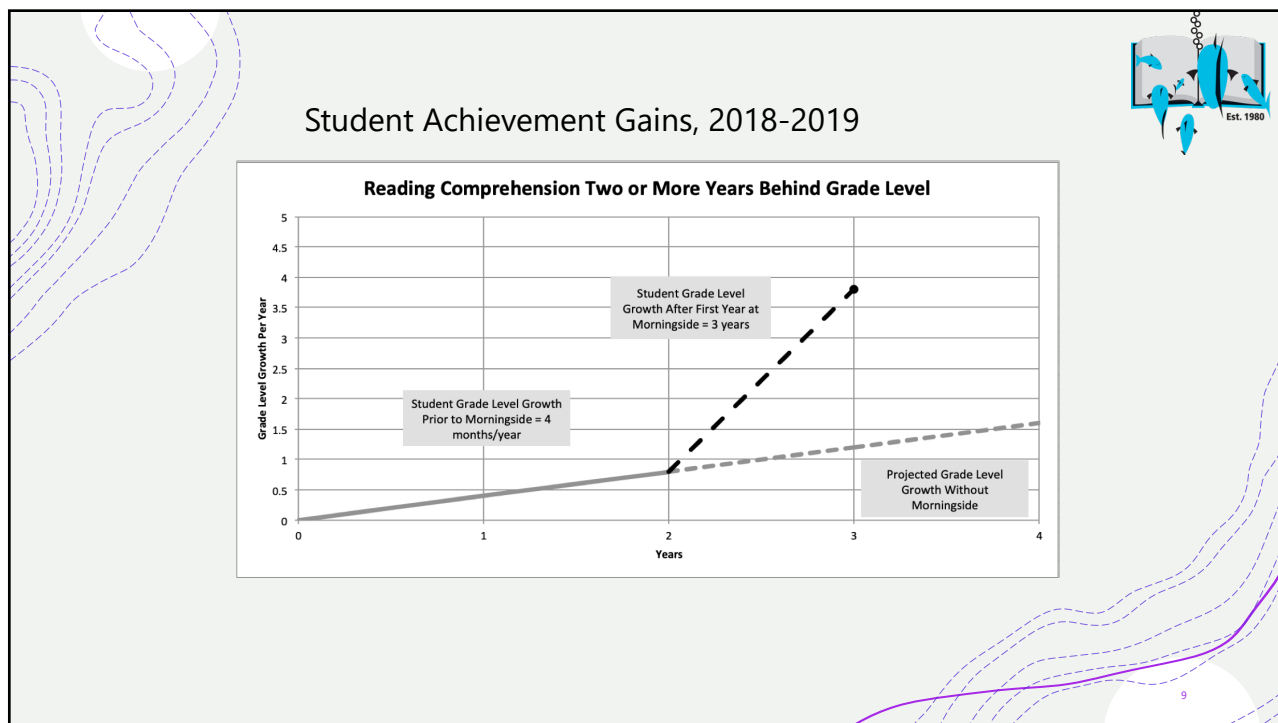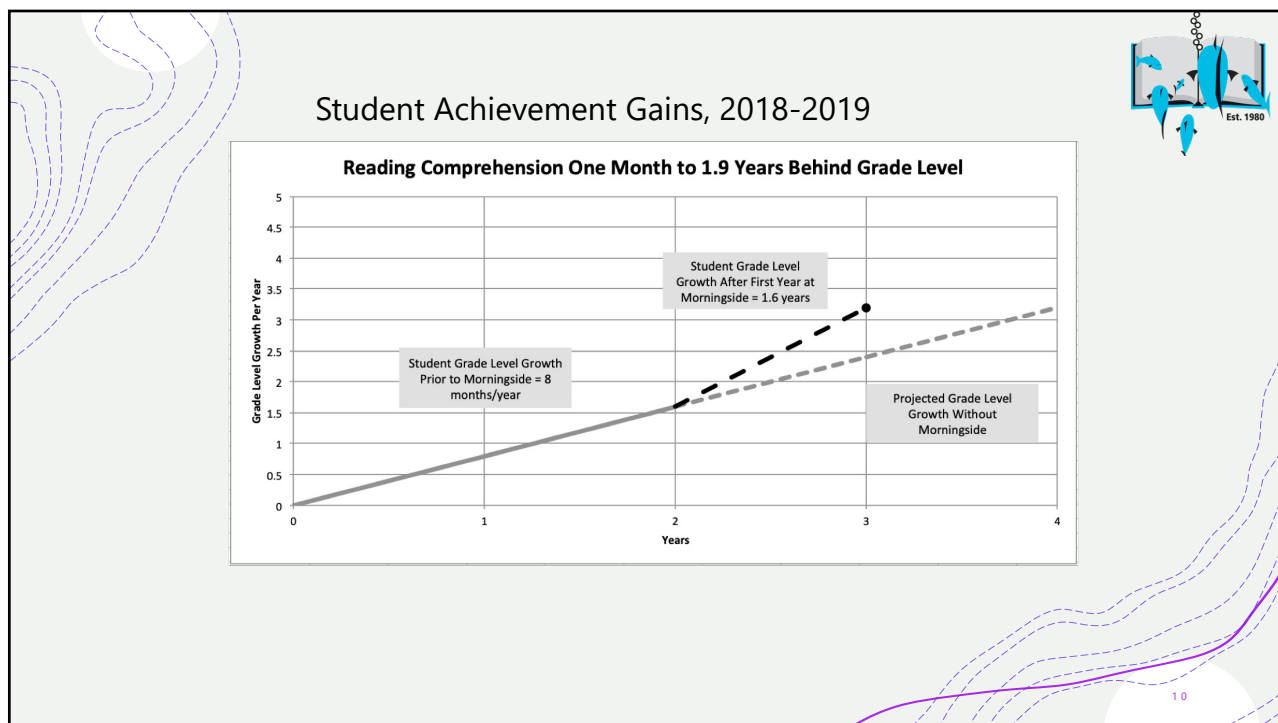
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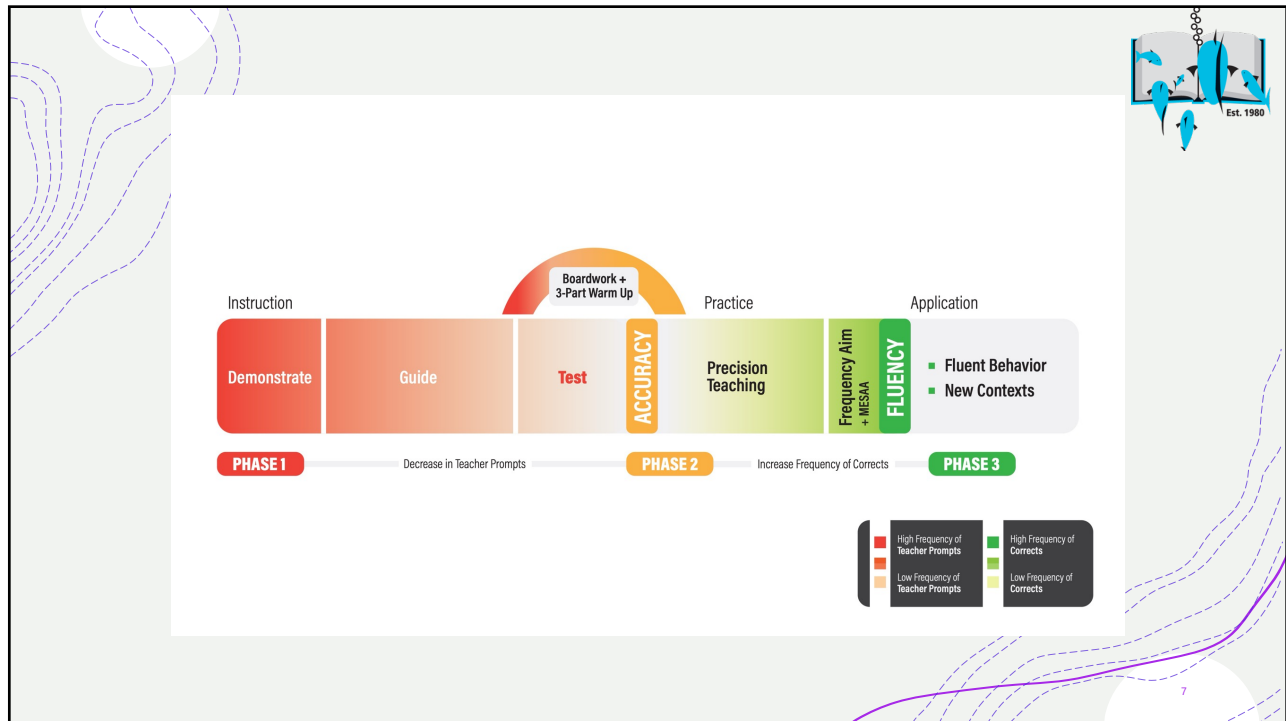
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Morningside's Learning Guarantees

- School Year
  - 2 or more years' growth in the area of greatest deficit (i.e., reading, writing, math) or your tuition returned
- Summer School
  - .5 or more years growth in the area of greatest deficit (i.e., reading, writing, math) or your tuition returned
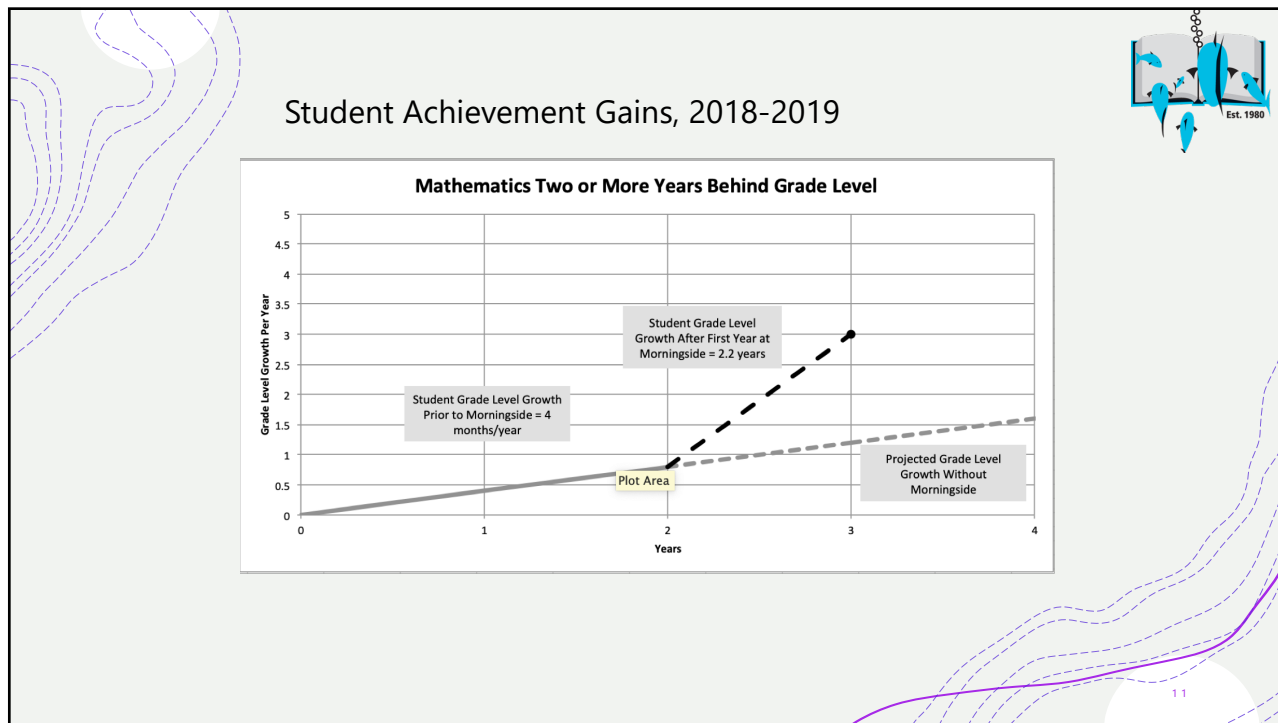- Less than 1% tuition refunded in 42 years
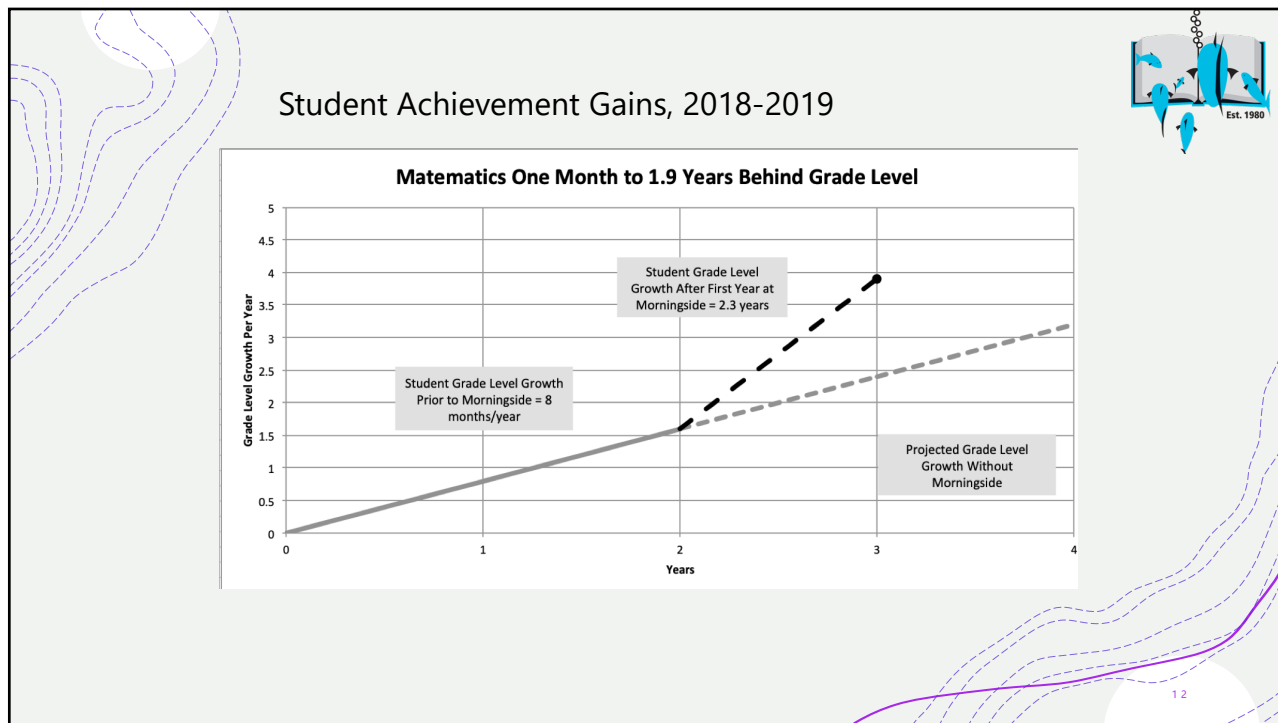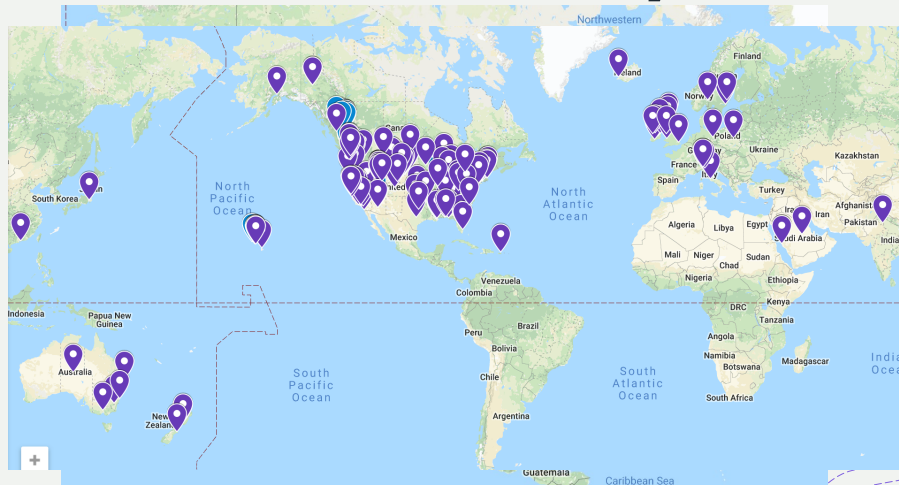- How do we stay in business?

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Student Achievement Gains, 2018-2019

Reading Comprehension Two or More Years Behind Grade Level

Student Grade Level Growth After First Year at Morningside = 3 years

Student Grade Level Growth Prior to Morningside = 4 months/year

Projected Grade Level Growth Without Morningside

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Student Achievement Gains, 2018-2019

Reading Comprehension One Month to 1.9 Years Behind Grade Level

Student Grade Level Growth After First Year at Morningside = 1.6 years

Student Grade Level Growth Prior to Morningside = 8 months/year

Projected Grade Level Growth Without Morningside

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Student Achievement Gains, 2018-2019

Mathematics Two or More Years Behind Grade Level

Student Grade Level Growth After First Year at Morningside = 2.2 years

Student Grade Level Growth Prior to Morningside = 4 months/year

Plot Area

Projected Grade Level Growth Without Morningside

Grade Level Growth Per Year

Years

11

11

Student Achievement Gains, 2018-2019

Matematics One Month to 1.9 Years Behind Grade Level

Student Grade Level Growth After First Year at Morningside = 2.3 years

Student Grade Level Growth Prior to Morningside = 8 months/year

Projected Grade Level Growth Without Morningside

Grade Level Growth Per Year

Years

12

12

Morningside Teachers' Academy

- Over 150 public schools and agencies around the US, Canada, and Europe have partnered with us to implement *The Morningside Model of Generative Instruction* (MMGI) as a Tier 1 prevention, or as Tier 2 and 3 Interventions
  - It's all about dosage!
- Partnerships have 5 main goals
  - 1. to help all students achieve grade level performance and higher
  - 2. to teach their faculty assessment, teaching, and learning strategies in all curriculum areas
  - 3. to teach their Principals how to become instructional leaders and support their faculty's efforts
  - 4. to help develop internal implementation, teacher education, and coaching systems to maintain our efforts after we exit
  - 5. to encourage investigation of better practices after their MMGI program is firmly in place.
    - Each partner school is its own potential laboratory school!

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Morningside Teachers' Academy


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Mouse Mountain Elementary
Fraser Lake, British Columbia

MOUSE MOUNTAIN ELEMENTARY SCHOOL
GRADE ONE STUDENT READING PERFORMANCE
FALL, 1996 AND SPRING, 1997
GATES MCGINITIE TEST OF READING
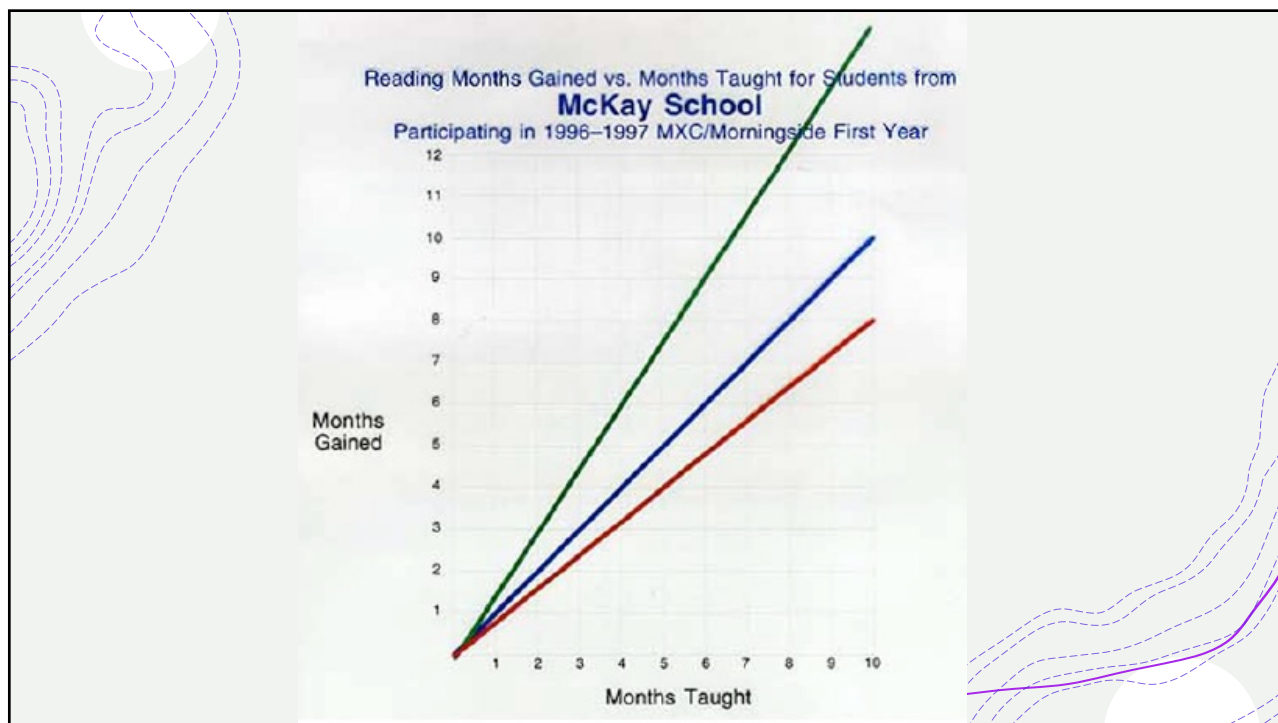PERCENT OF GRADE 1 STUDENTS "ABOVE AVERAGE"
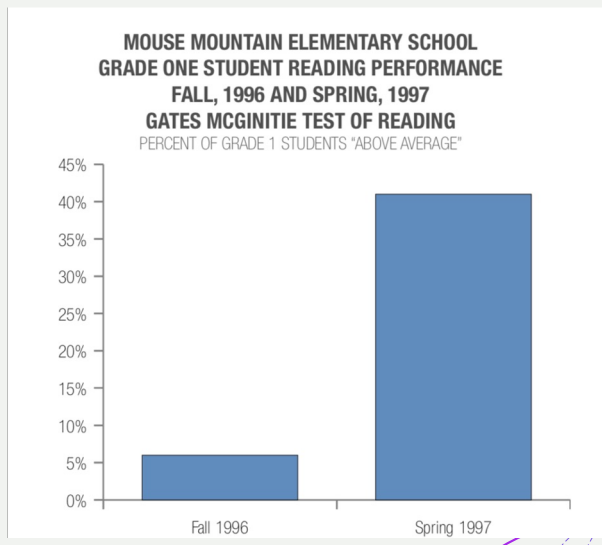
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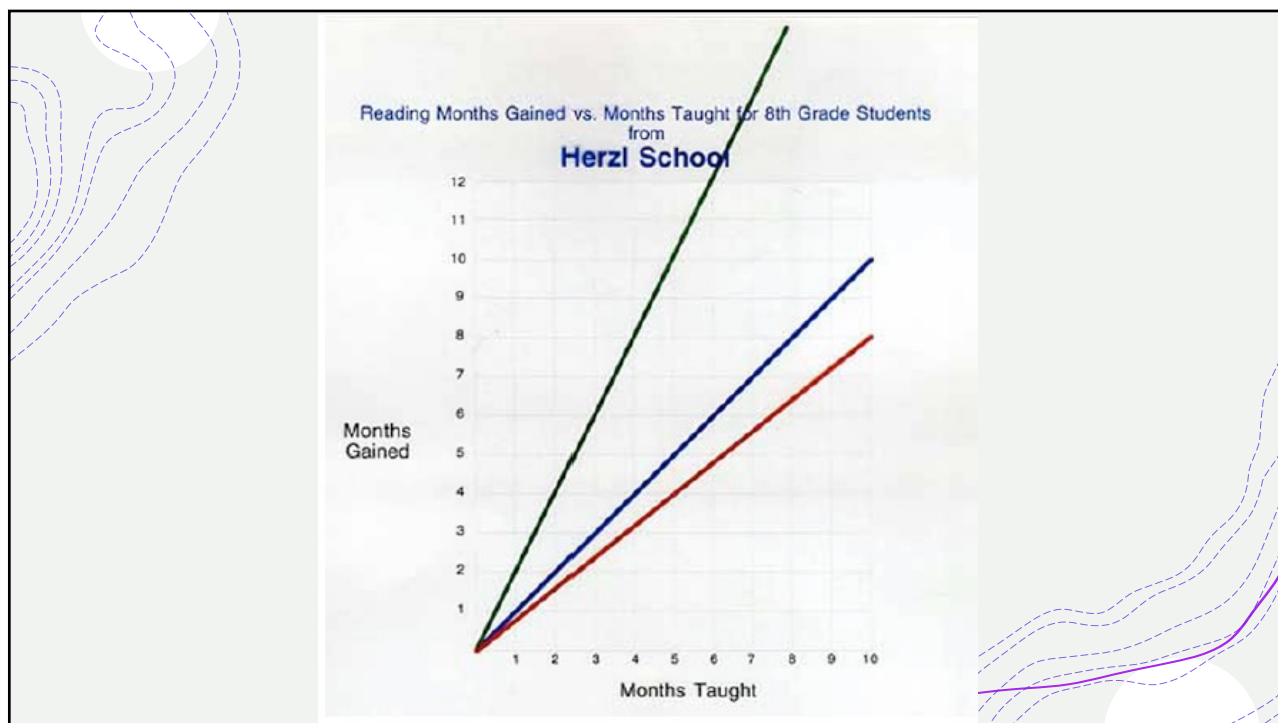

Reading Months Gained vs. Months Taught for Students from
Hearst Elementary
Participating in 1996–1997 MXC/Morningside First Year

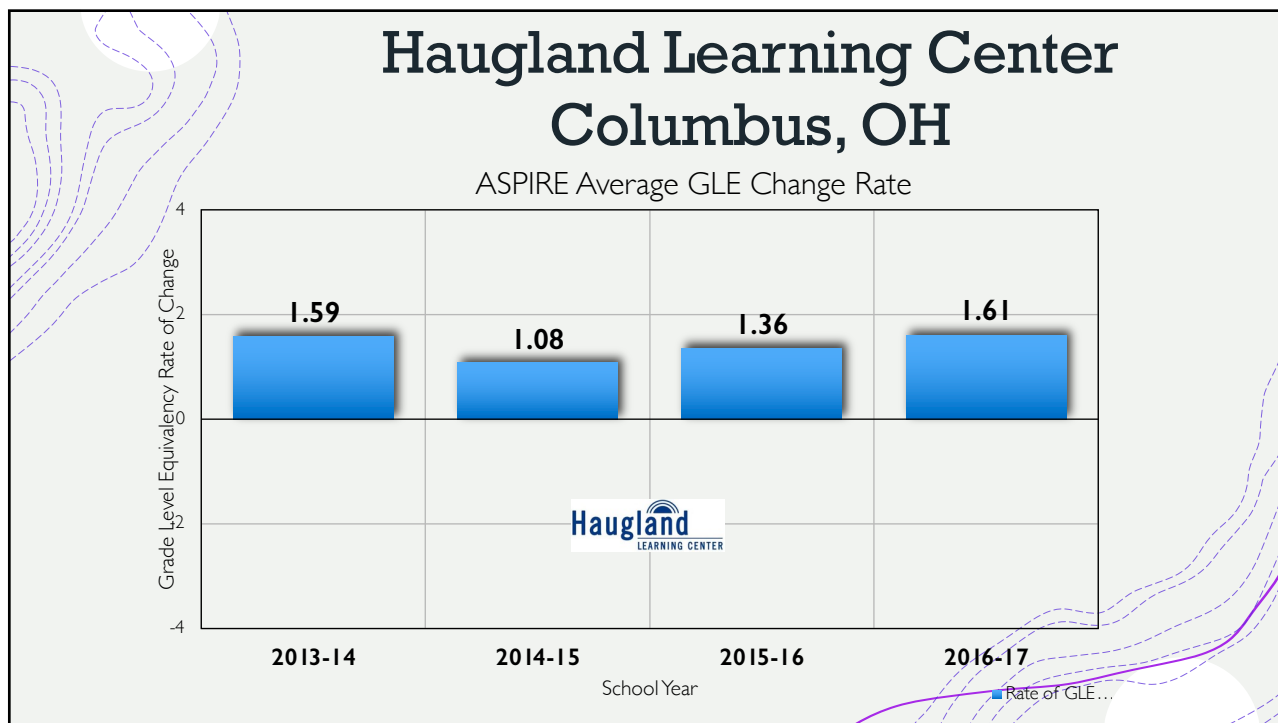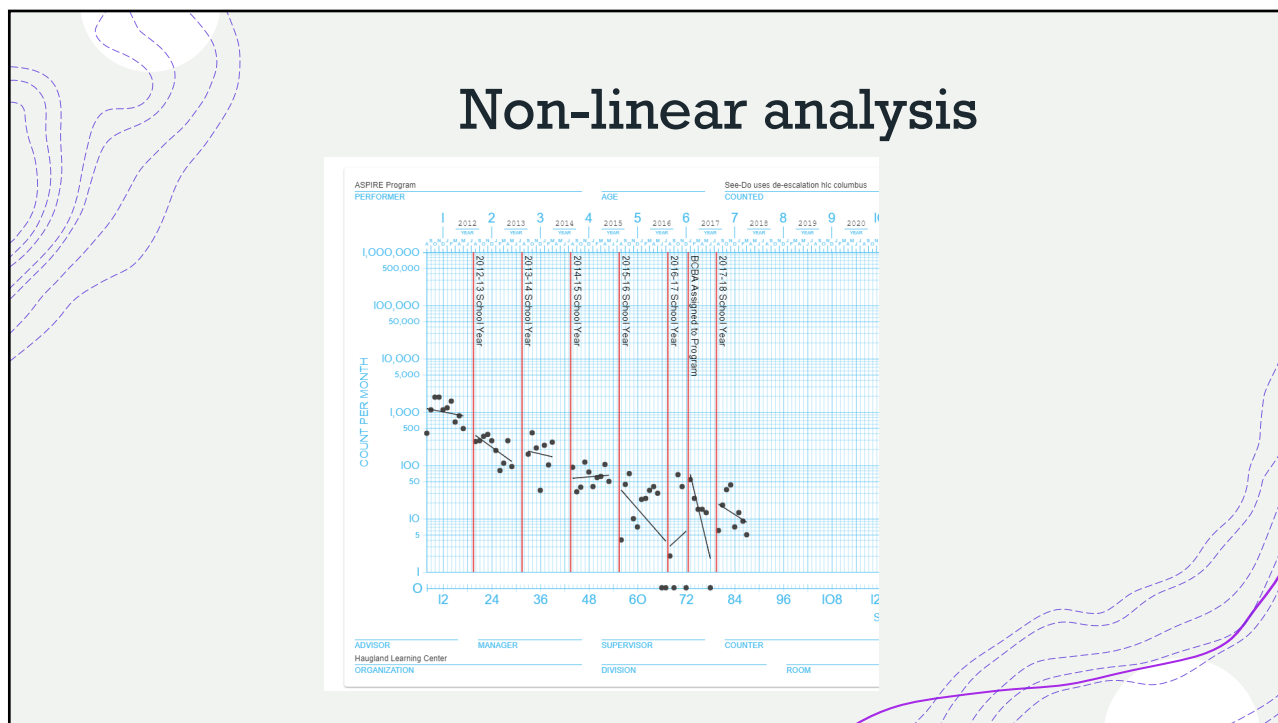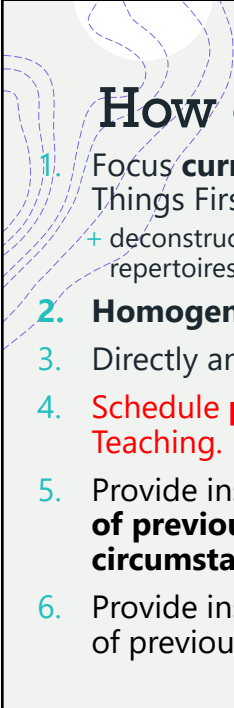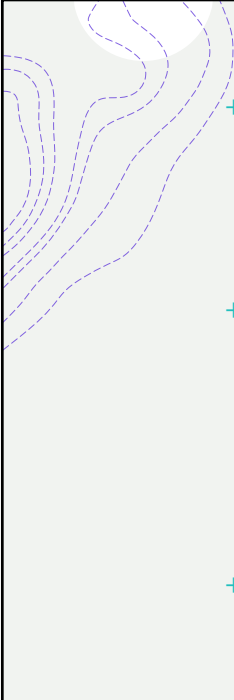Months Gained

Months Taught
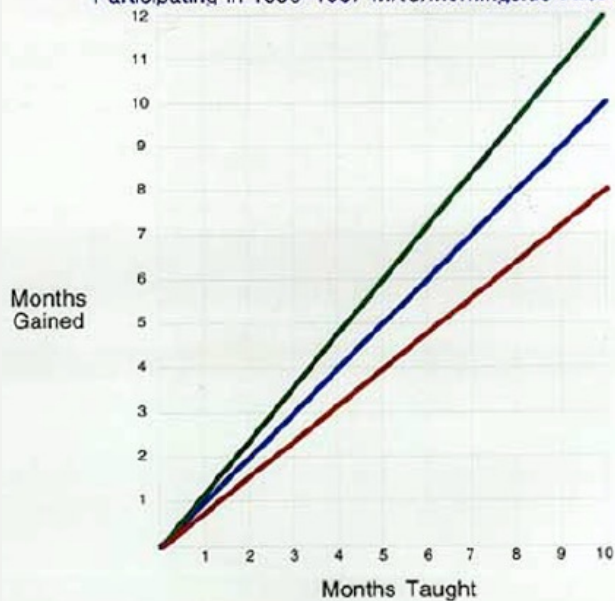
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How do we produce these gains?

1. Focus **curricula** for instruction on **component** skills and processes. "First Things First"
   + deconstructed from today's classroom holistic activities, and real-world composite repertoires
2. **Homogeneously group** learners for instruction.
3. Directly and **explicitly teach** components with Mathetics.
4. Schedule **practice** of components to **fluency** with celeration with Precision Teaching.
5. Provide instruction and guided opportunities to practice **direct application of previously taught skills and concepts to holistic, real-world circumstances**.
6. Provide instruction and guided opportunities to engage in re-combinations of previously taught behavior in novel conditions.

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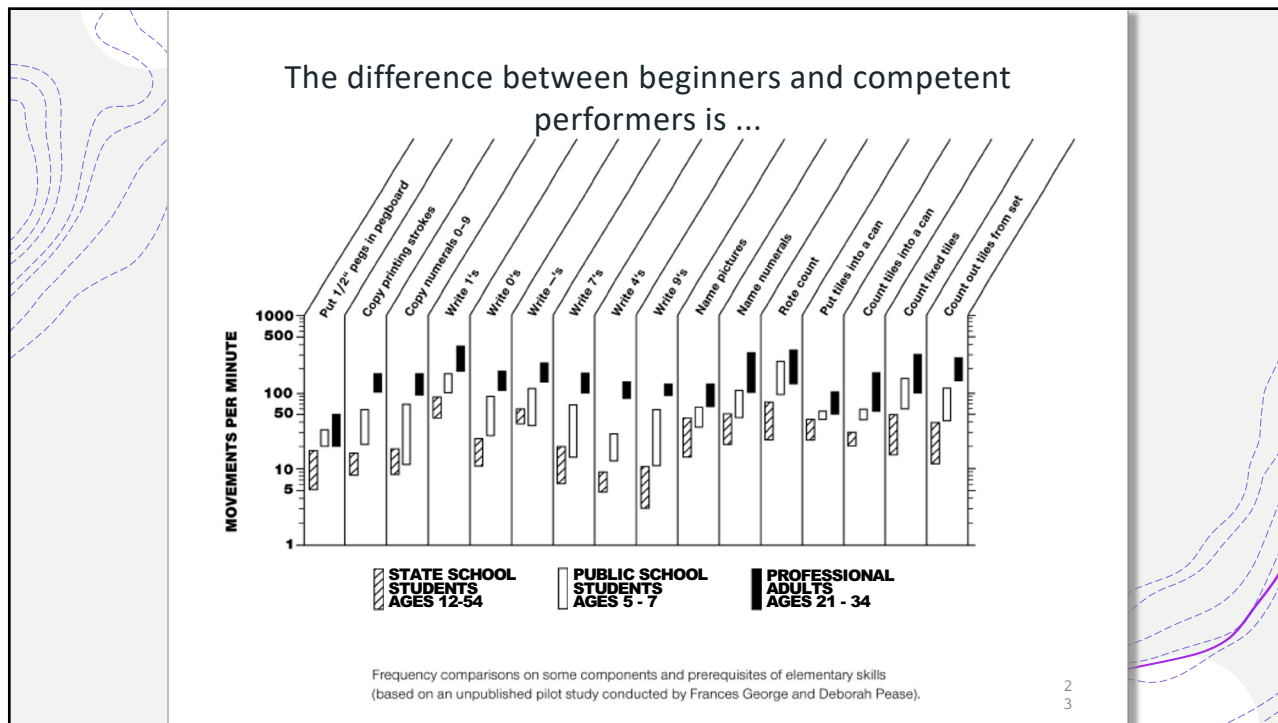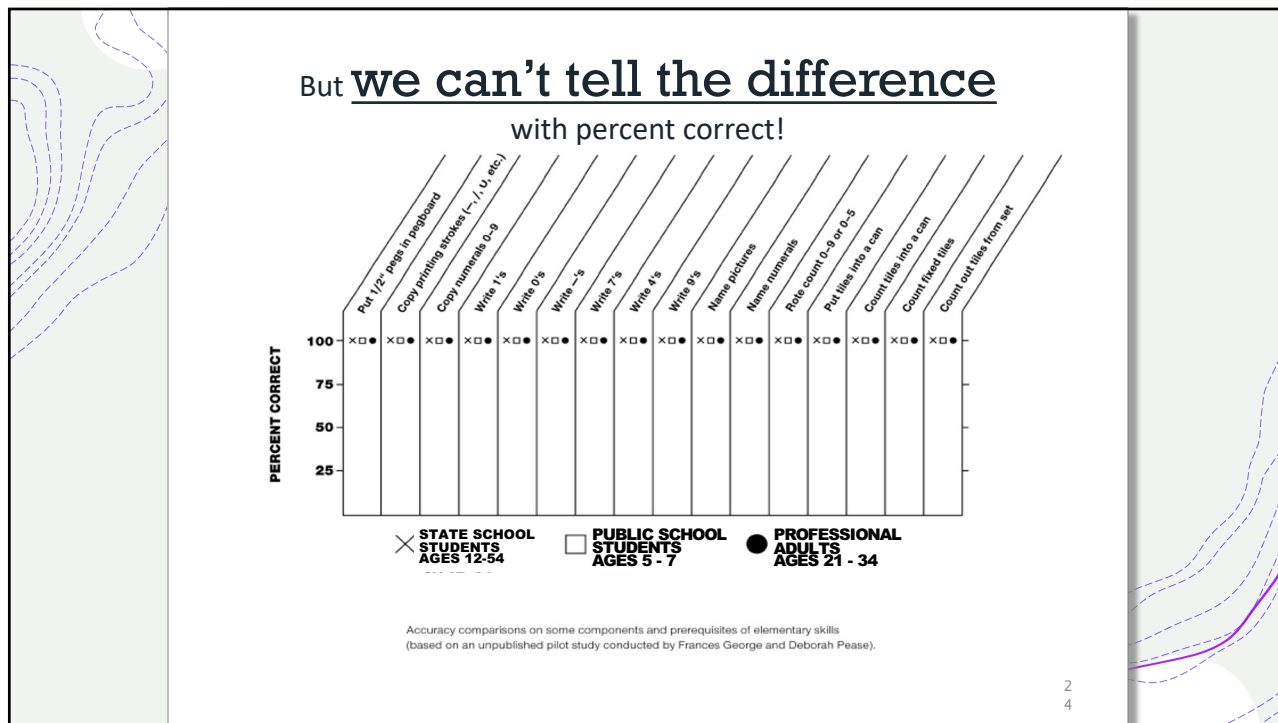---

4. Practice to fluency with celeration

+ Schedule timed practice of component behaviors taught with mathetics, with teacher & peer coaching
  + to make performance automatic or **fluent**
  + and to promote quick, flexible, **agile** learning patterns (celeration).
+ Key technology is Precision Teaching
  + Learners chart their performance on a **Standard Celeration Chart** after each timing, monitor their data, & ask for help when needed to
    + meet a **frequency aim,** indicating **fluency** in a timely manner
    + meet a **celeration aim,** indicating **agility**
  + **peer coaching**
+ Current trends in more holistic educational practices that focus on complex objectives usually squeeze out time for building component fluency.

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The difference between beginners and competent performers is …

Frequency comparisons on some components and prerequisites of elementary skills
(based on an unpublished pilot study conducted by Frances George and Deborah Pease).

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But we can't tell the difference
with percent correct!

Accuracy comparisons on some components and prerequisites of elementary skills
(based on an unpublished pilot study conducted by Frances George and Deborah Pease).

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What exactly is fluency?

Formally defined as performance that is:

- easily executed whenever necessary (maintained)

- for as long as necessary (enduring)

- not easy to distract (stable)

- easily applied in new situations (application)

- easily combined with other performances as necessary to figure out skills or knowledge, or create something new (generative)

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Indicators of Fluency

- Maintenance: Performance is available as needed in and out of the classroom

- Endurance: Performance continues for as long as necessary, has 'staying power'

- Stability: Performance is not subject to distraction

- Application: Performance occurs other similar situations & contexts that share the same critical features

- Adduction: Performance blends and combines with other fluent performances to solve new problems
  - i.e. figuring out,' 'problem solving''creativity,' 'discovery learning'

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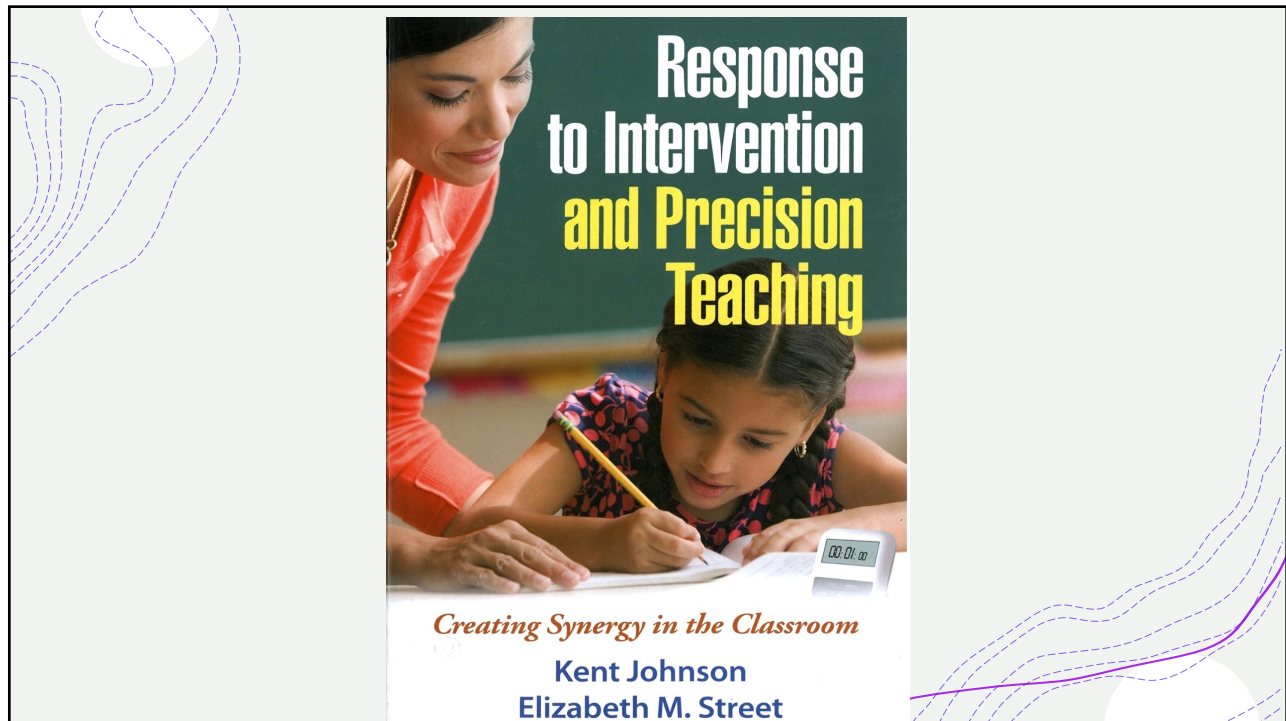
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What is Precision Teaching?

Precision Teaching is a system for precisely defining and continuously measuring dimensional features of behavior and analyzing behavioral data on the Standard Celeration Chart to make timely and effective data-based decisions to accelerate behavioral repertoires.
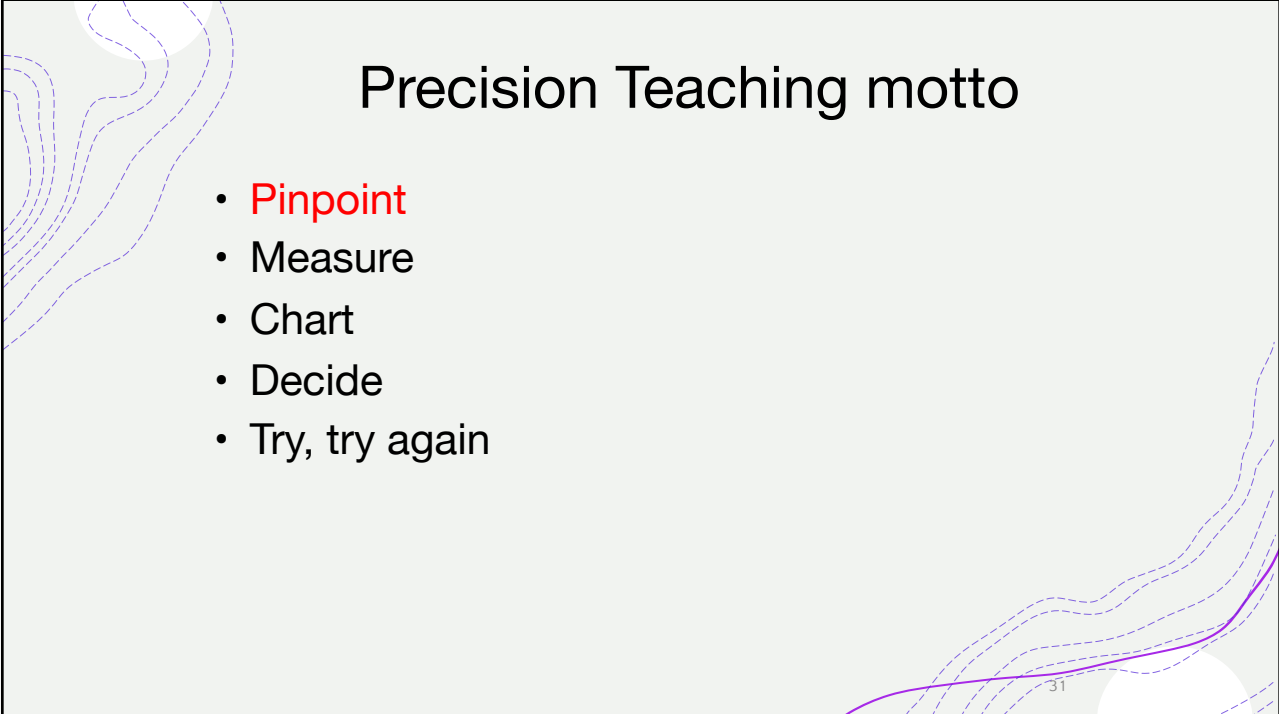-Evans, Bulla & Kieta (2020)

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Ok, but what is it?

- A framework for teachers and students to engage in *deliberate*, *meaningful* practice of both prerequisite and newly learned skills
- A method for setting daily, incremental *goals*
- An easy and effective way tool for making frequent, *data-based decisions*
- A fun and energetic way to engage students at all levels of MTSS systems
- A set of procedures for building *fluency*

- What it's not: Drill and Kill, Racing, Busy Work, "Going Fast"
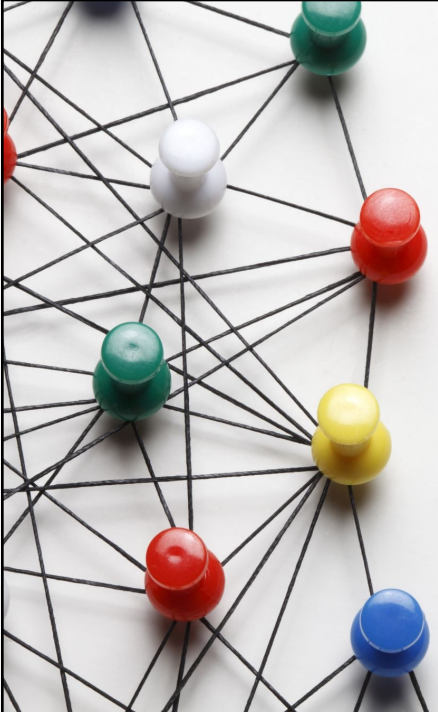
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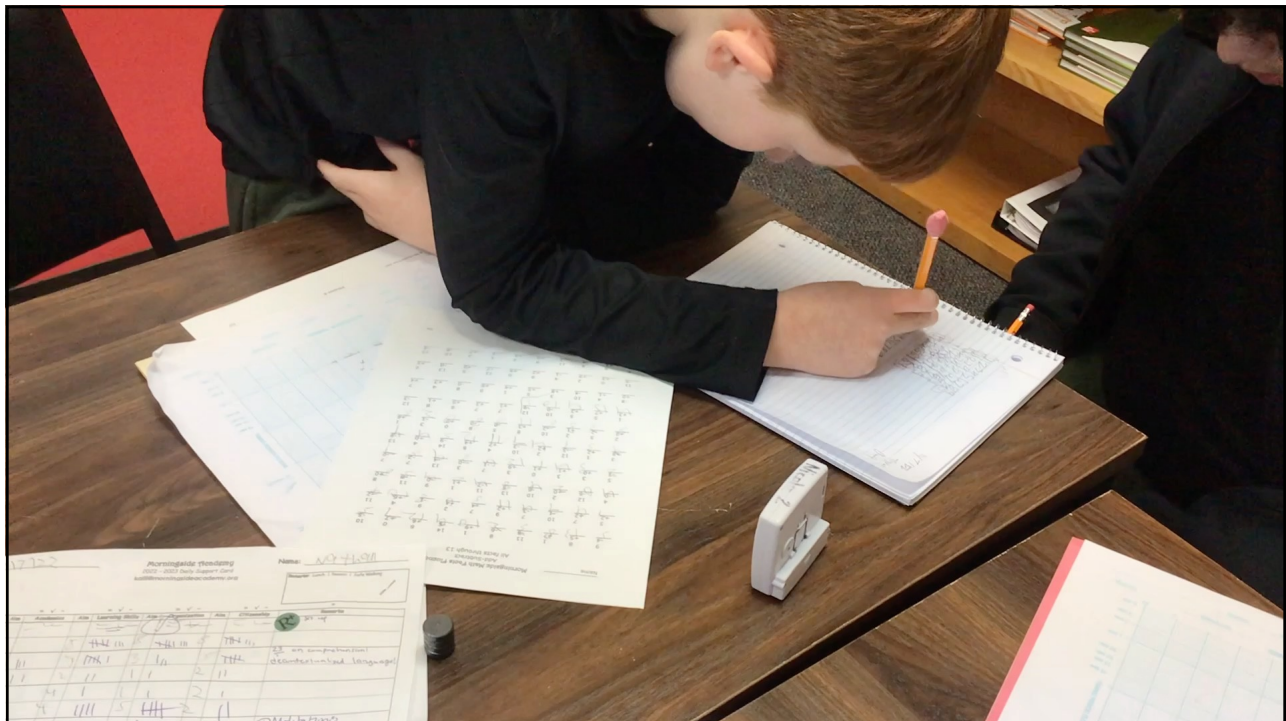
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Precision Teaching motto

- Pinpoint
- Measure
- Chart
- Decide
- Try, try again

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Component-Composite Analysis

+ We can terminal goals (i.e., composites) down into smaller component repertoires

+ If we want column addition, we will not start with teaching column addition → Need to look at component skills that are required to produce that skill

+ In order to identify what skills to pinpoint for instruction, we need to analyze our instructional material into the relevant components

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Component/Composite Analysis

Composite Repertoires	Component Repertoires	Tool Skills
jazz improvising	playing a complicated piece on a piano	playing piano scales
inventing new medical procedures	designing protocol for liver biopsy	identifying medical tools
solving urban living problems	synchronizing traffic flow with traffic signals	reading traffic flow reports
critical reading	retelling what's read	decoding text
expert ice skating	completing a Figure 8	coming to a stop

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Component–Composite Analysis

	Definition	Example
Composite Skills	Higher-level performances; combinations & blends of component repertoires	Writing Numbers
Component Skills	• Second level building blocks • depend on one or more tool skills	- Holding a pencil - Making marks
Tool Skills	Minimal response sets that underpins all other skills • entry repertoire before starting a program	- Pinching

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Component-Composite Analysis

+ Tool, component, and composite skills are all **relative** to
  + The entering behavior repertoire for the learning
  + The specific objective or goal

+ What is a tool skill for one person or objective, may be a component skill for

Skill Analysis			
Composite(s)	Writing Numbers		
Component Skill(s)	Holding a Pencil Making Marks		
Tool Skill(s)	Pinching Squeezing Attending to stimuli		

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Component-Composite Analysis

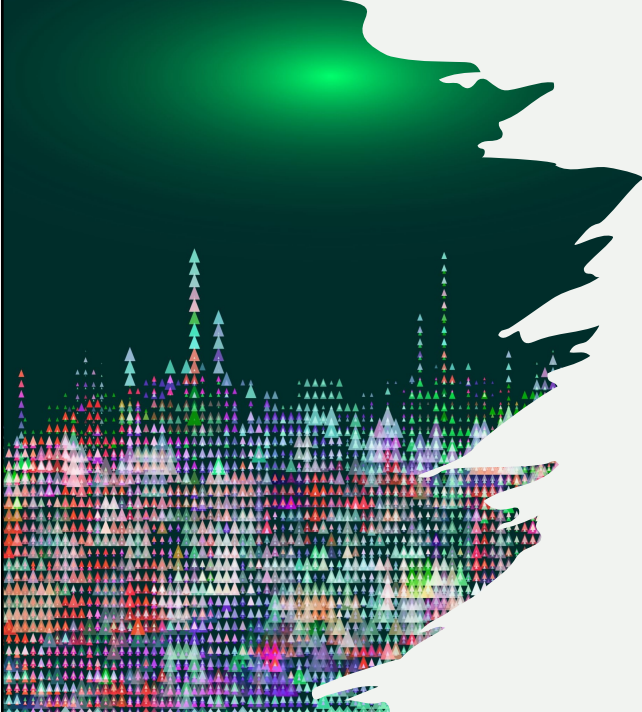| Skill Analysis			
Composite(s)	Writing Numbers	Single Digit Math Facts Setting up math problems	
Component Skill(s)	Holding a Pencil Making Marks	Writing Numbers Discrimination between numerical signs (+ , - , x , ÷)	
Tool Skill(s)	Pinching Squeezing Attending to stimuli	Holding Pencil Writing Marks	

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Component-Composite Analysis

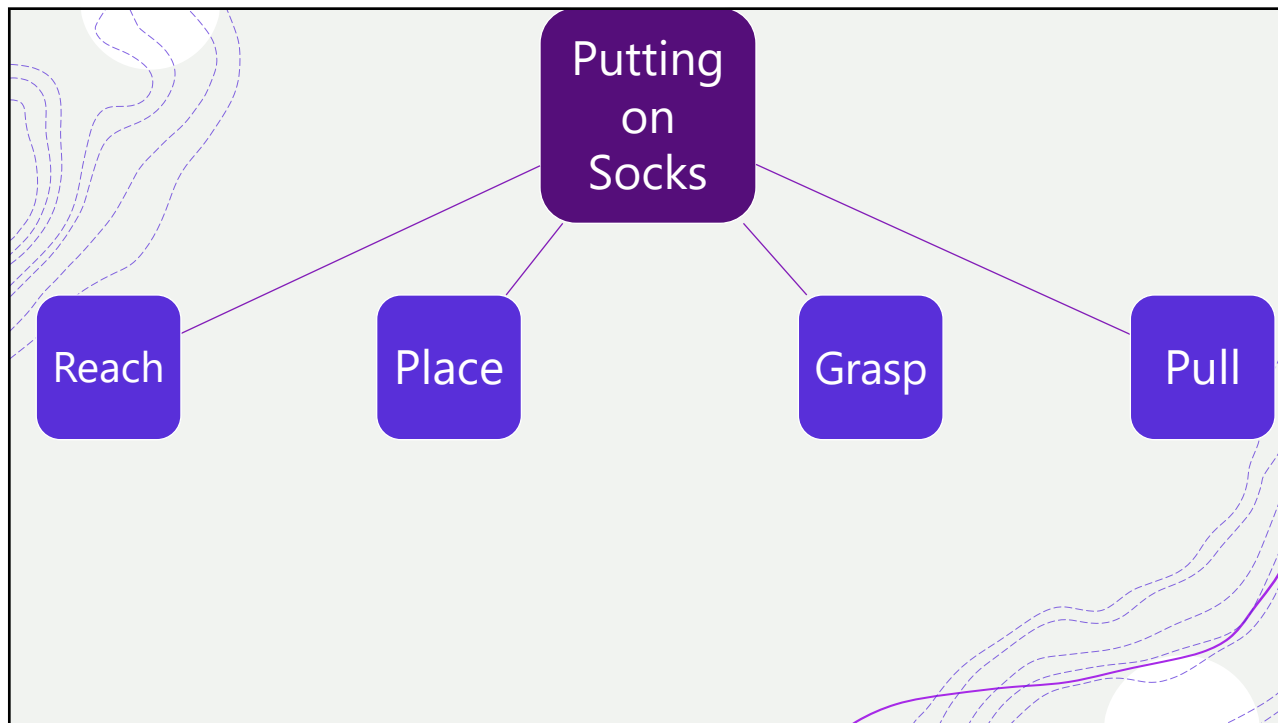| Skill Analysis			
Composite(s)	Writing Numbers	Single Digit Math Facts Setting up math problems	Basic Computational Algorithms (+ , - , x , ÷)
Component Skill(s)	Holding a Pencil Making Marks	Writing Numbers Discrimination between numerical signs (+ , - , x , ÷)	Single Digit Math Facts Setting up math problems
Tool Skill(s)	Pinching Squeezing Attending to stimuli	Holding Pencil Writing Marks	Writing Numbers Discrimination between numerical signs (+ , - , x , ÷)

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Component-Composite Analysis

+ Focus on building frequencies of component skills
+ Functional relationship between fluency in component skills and growth on the composite level

+ Example: Building frequencies on writing numbers 0-9 directly affects performance on math facts
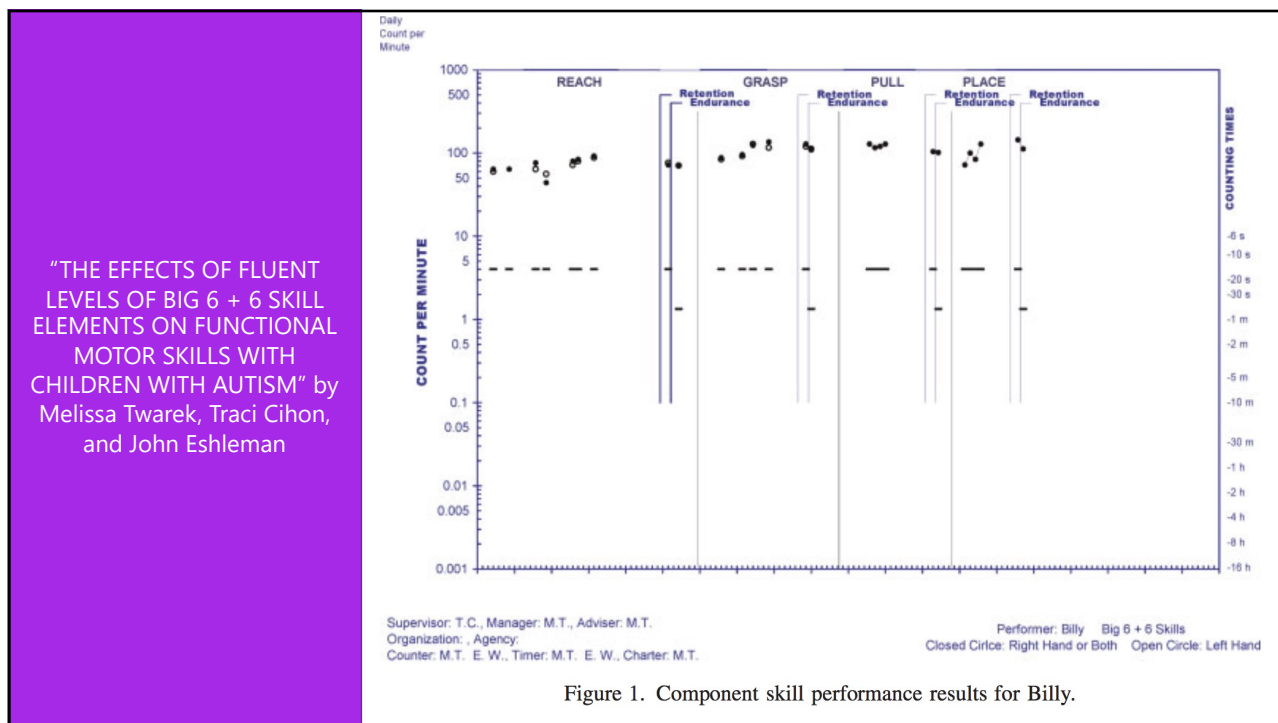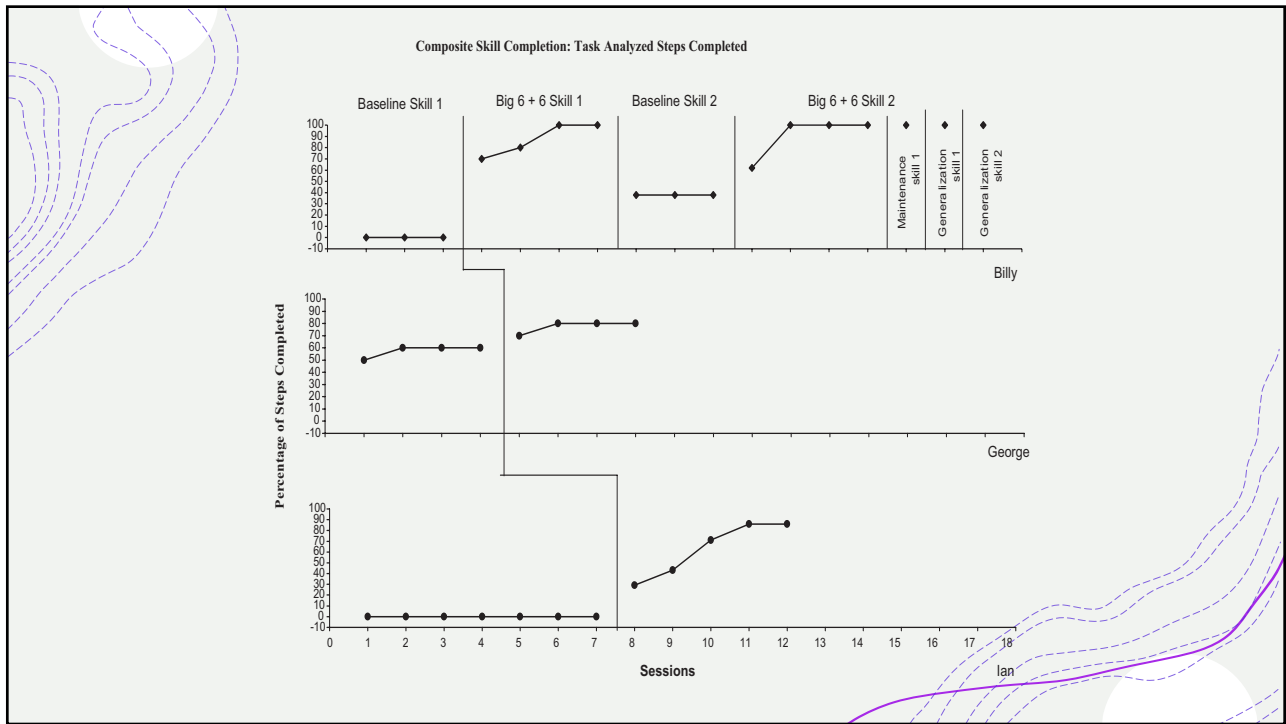+ Example: Building frequencies of pinching directly affects performance on fine motor skills

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"THE EFFECTS OF FLUENT LEVELS OF BIG 6 + 6 SKILL ELEMENTS ON FUNCTIONAL MOTOR SKILLS WITH CHILDREN WITH AUTISM" by Melissa Twarek, Traci Cihon, and John Eshleman

Figure 1. Component skill performance results for Billy.

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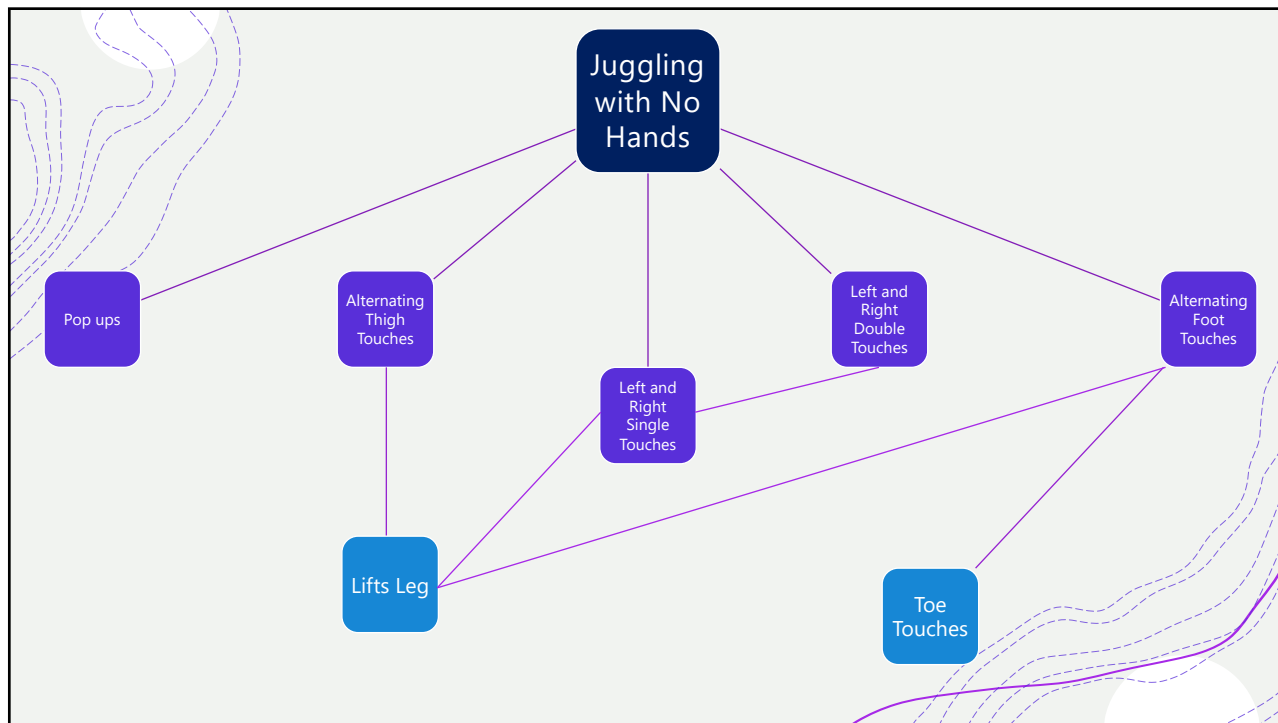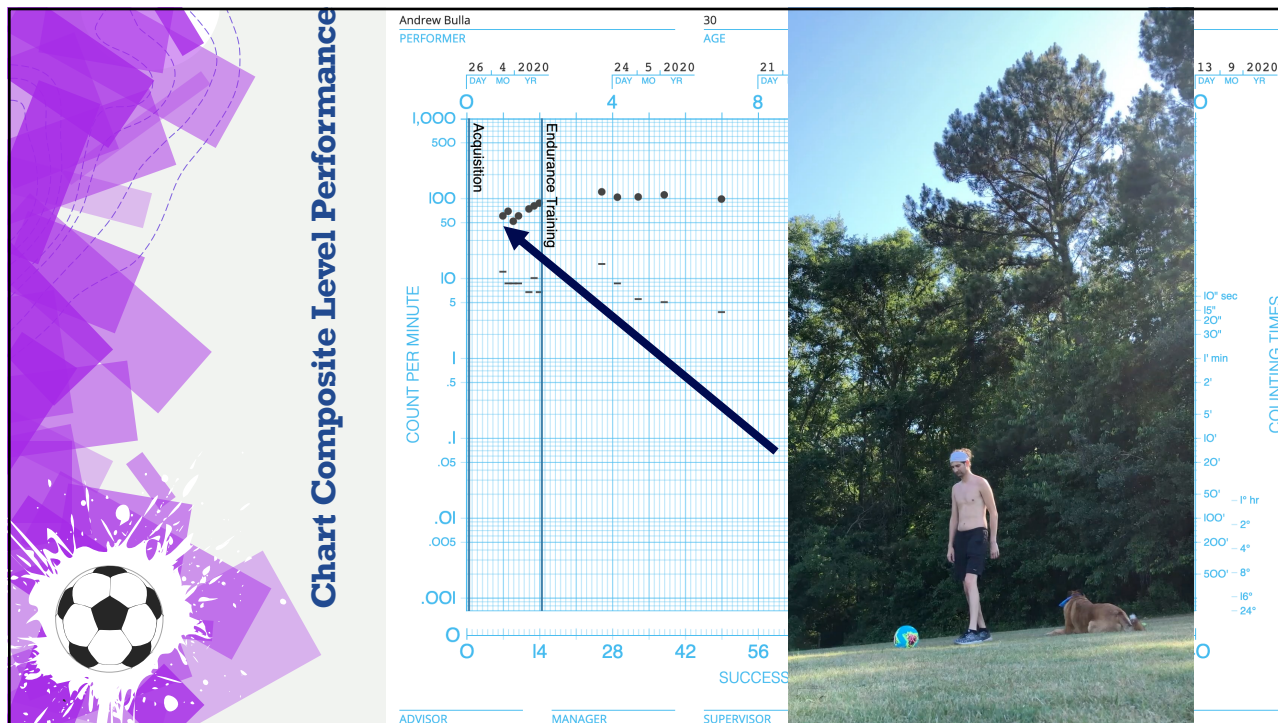Composite Skill Completion: Task Analyzed Steps Completed

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Component/Composite Analysis of Juggling

Composite Repertoire

Juggling with no hands

Component Skills

Left and Right foot single touches
Left and Right foot double touches
Alternating thigh touches
Alternating foot touches
Pop ups

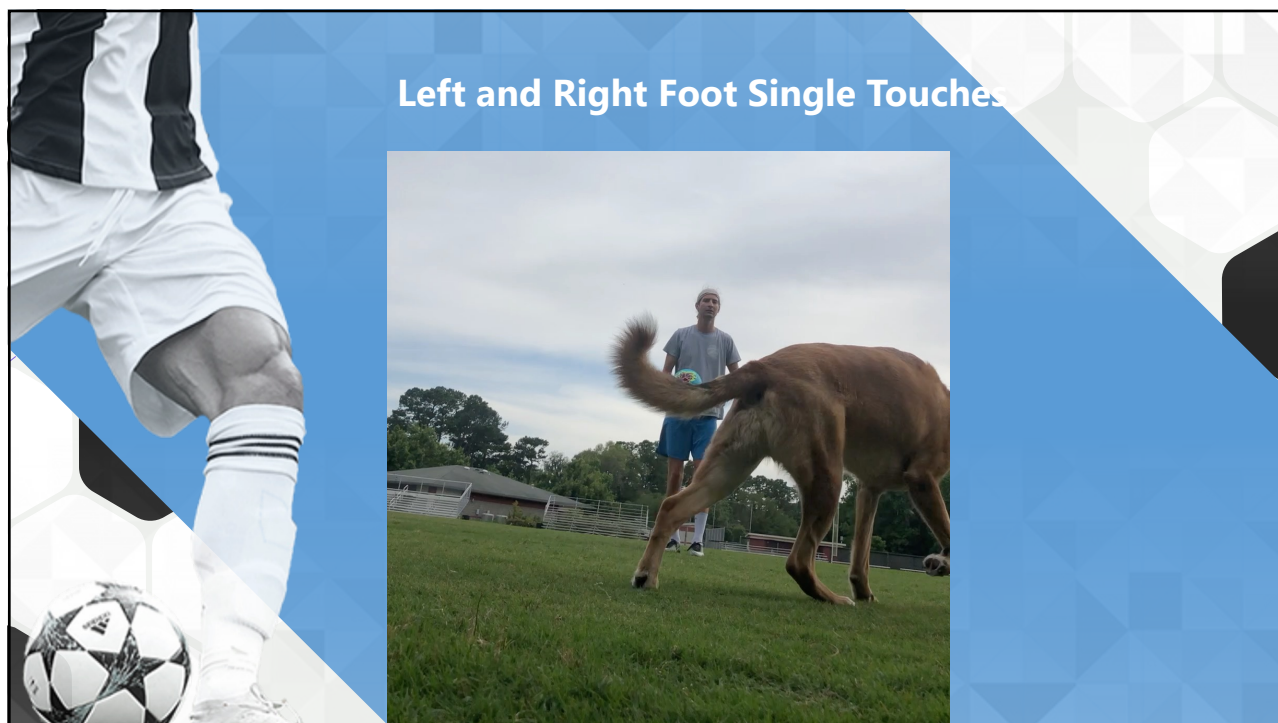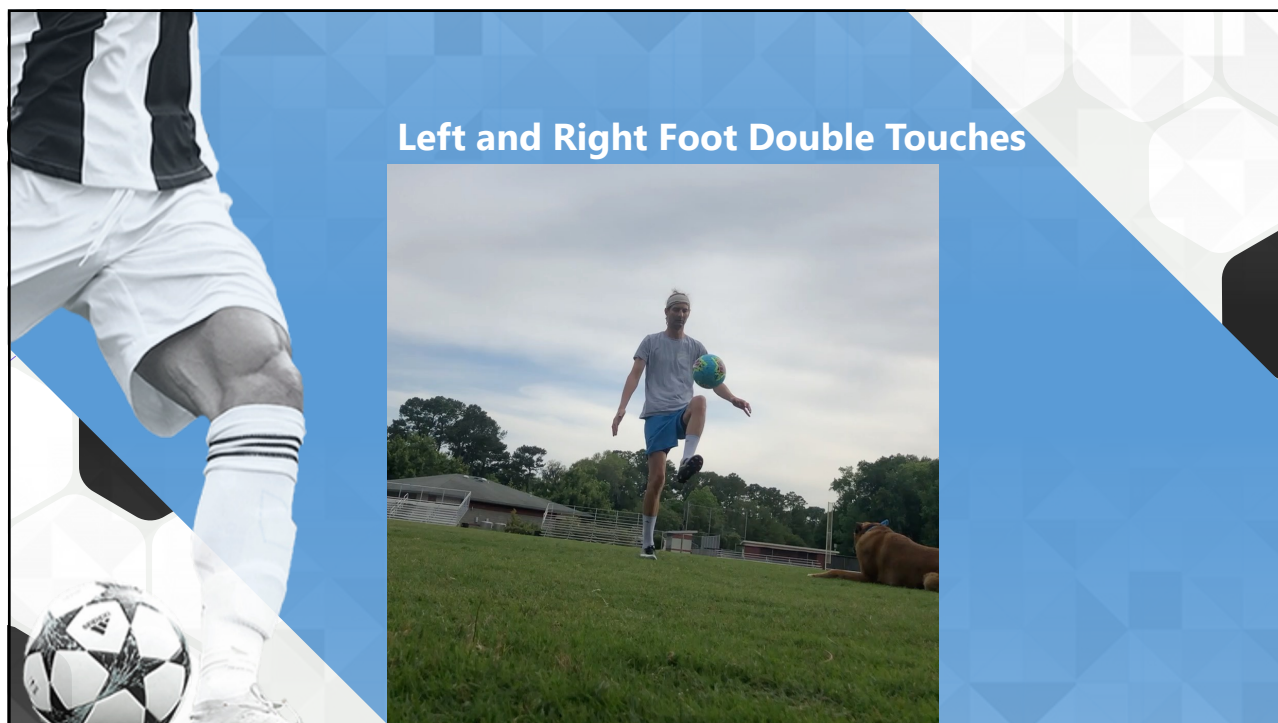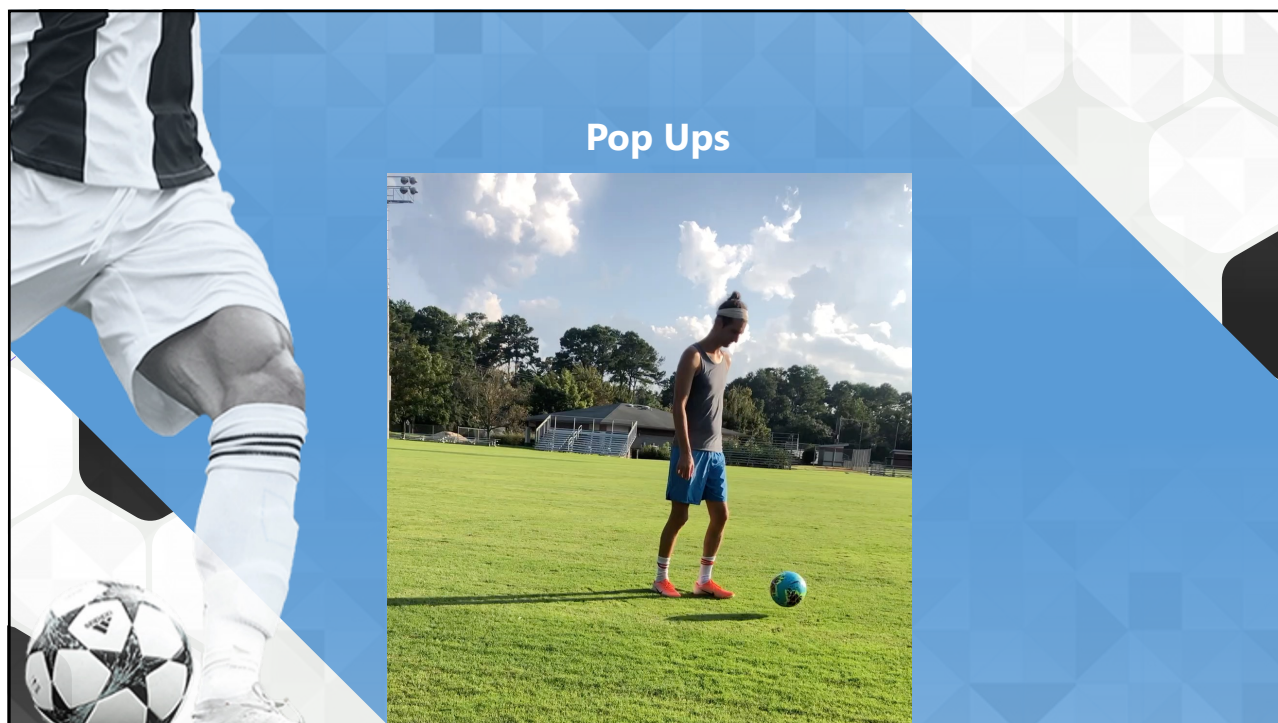**Tool Skills**

Toe Touches
Lifts Leg

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Juggling with No Hands

Pop ups

Alternating Thigh Touches

Left and Right Double Touches

Alternating Foot Touches

Left and Right Single Touches

Lifts Leg

Toe Touches

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Chart Composite Level Performance

Andrew Bulla
PERFORMER

30
AGE

26 | 4 | 2020
DAY | MO | YR

24 | 5 | 2020
DAY | MO | YR

21
DAY

4

8

13 | 9 | 2020
DAY | MO | YR

1,000
500

Acquisition

Endurance Training

100
50

10
5

1
.5

.1
.05

.01
.005

.001

COUNT PER MINUTE

0

0   14   28   42   56

SUCCESS

10" sec
15"
20"
30"

1' min

2'

5'

10'

20'

50'   1° hr
100'   2°
200'   4°
500'   8°
        16"
        24"

COUNTING TIMES

ADVISOR   MANAGER   SUPERVISOR

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Acquisition with TAGteach

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Left and Right Foot Single Touches

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Left and Right Foot Double Touches

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Alternating Thigh Touches
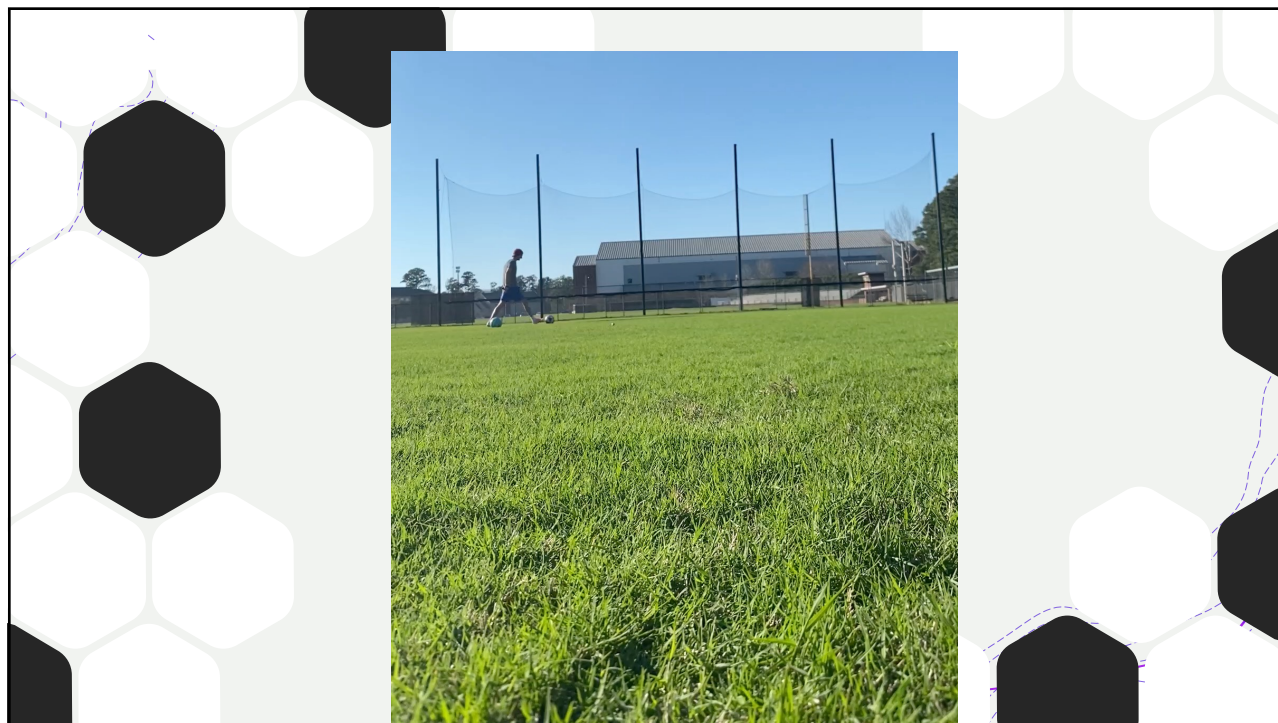

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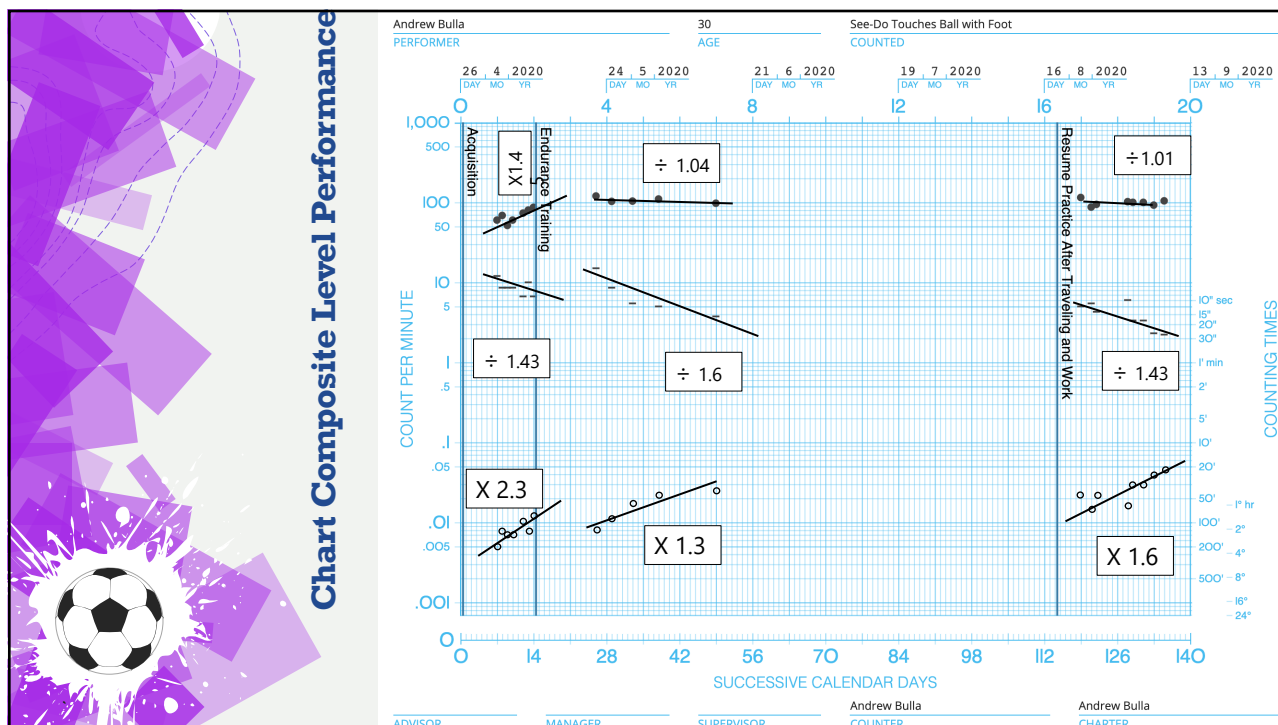**Alternating Foot Touches**
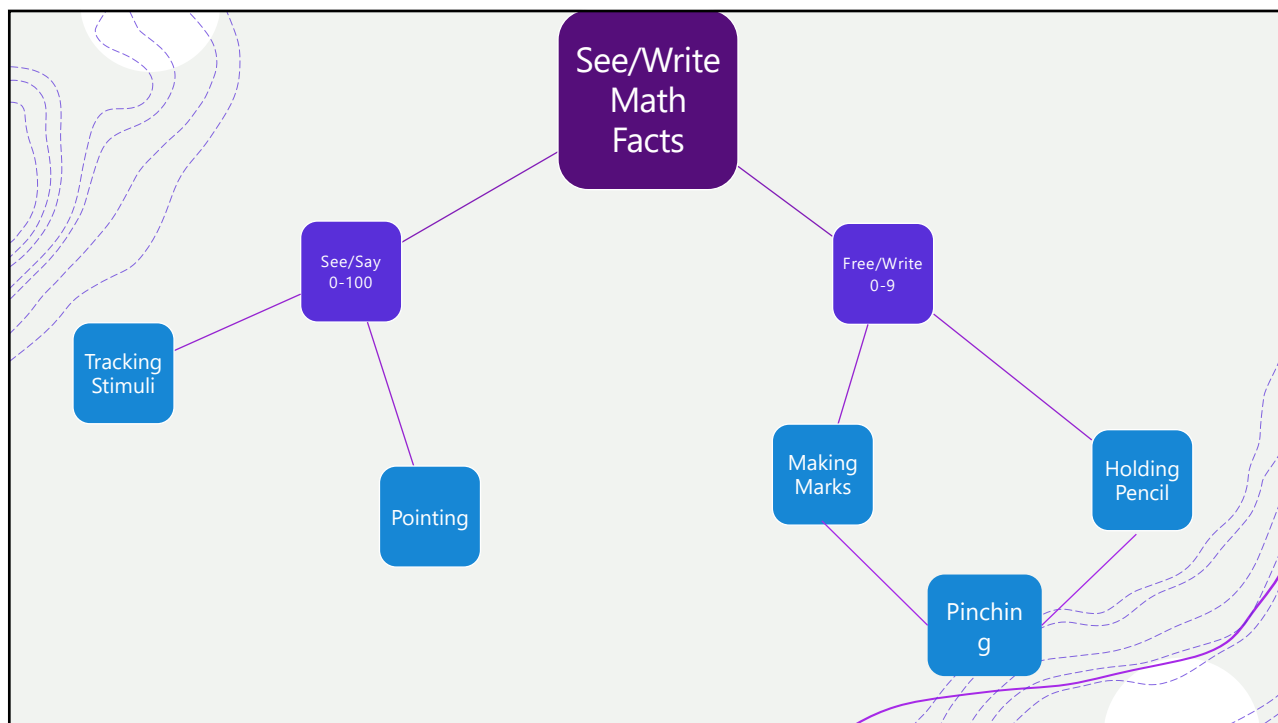

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Pop Ups

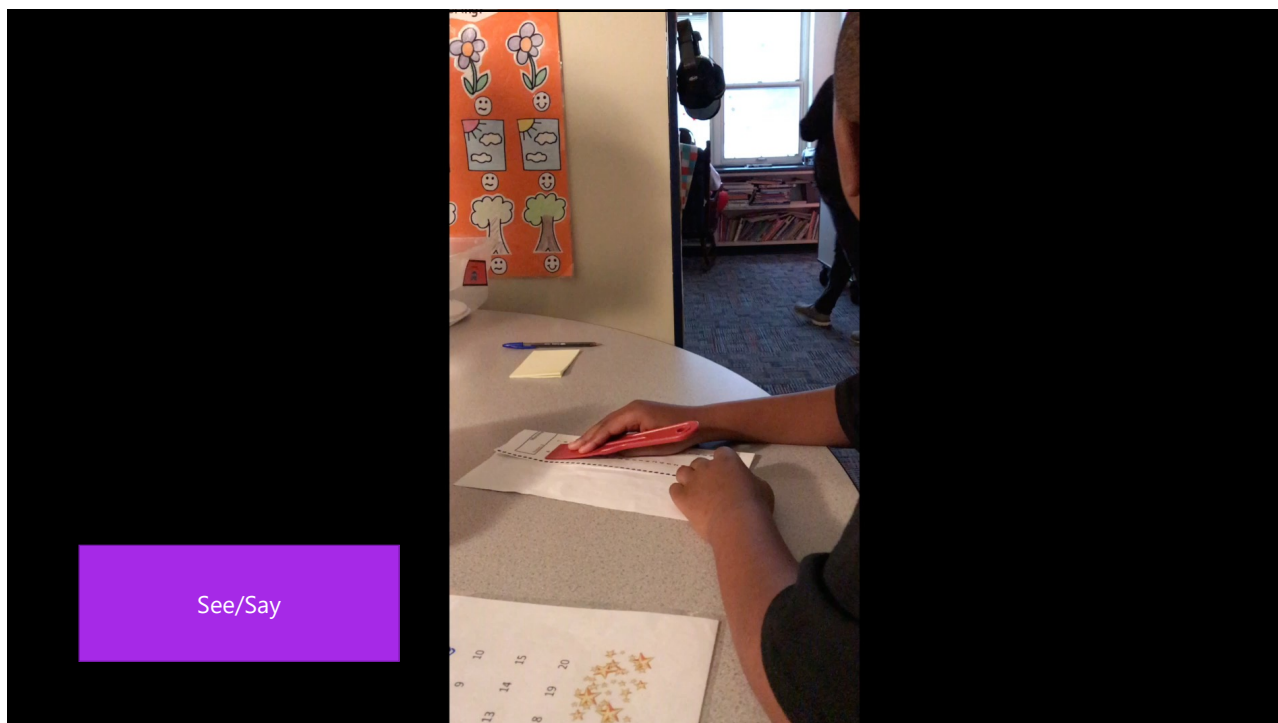50

2/16/24

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Component Skill – Math Project

+ Setting: Pull out room in a school for children with ASD
+ Participants:
    + Six children in control group
    + Three children in intervention group
+ Intervention:
    + Control group received instruction as normal
    + Intervention received instruction on math tool skills first
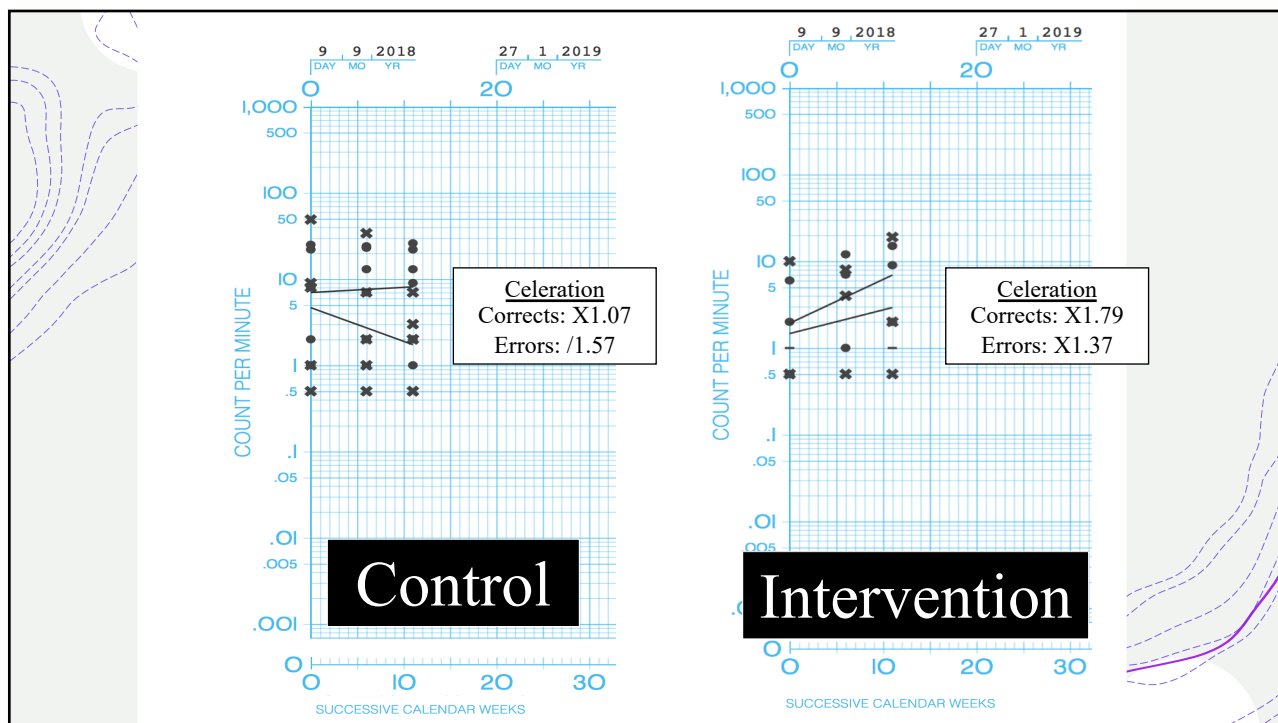   + Once frequency aims met, began MMFF curriculum

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See/Write Math Facts

See/Say 0-100

Free/Write 0-9

Tracking Stimuli

Pointing

Making Marks

Holding Pencil

Pinching

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See/Say

55

See/Write

56

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Control

Intervention

Celeration
Corrects: X1.07
Errors: /1.57

Celeration
Corrects: X1.79
Errors: X1.37

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