

Integrating a Response to Intervention Paradigm with Cognitive Neuropsychology:

A Hybrid Model of Assessment & Evaluation




Steven G. Feifer
Frederick County Schools
Feifer@frederickmd.com

Ronald A. Sudano
PaTTAN Pittsburgh
rsudano@pattan.net




PRESENTATION OF GOALS

1. Discuss the current paradigm shift in school psychology away from traditional norm referenced testing to curriculum-based measurement.
2. Discuss the new IDEA-2004 and its implications on identifying students for special education services.
3. Examine the advantages and disadvantages of utilizing curriculum based measurement within a Response To Intervention model as a framework for delivering appropriate interventions for all students.
4. Explore an integrated method of data collection utilizing the assessment techniques of both CBM and cognitive assessment model to better meet the needs of all students.



MAIN PITFALLS OF DISCREPANCY MODEL

1. There is no universal agreement on what the discrepancy should be, or developmental guidelines for discrepancy expectations.
 - ▶ 48/50 states require a IQ/Achievement discrepancy, yet 20/50 provide no guidance about magnitude of discrepancy.
 - ▶ Size of discrepancy varies from 15 to 30 points.
 - ▶ Leads to inconsistent special education services for children



MAIN PITFALLS OF DISCREPANCY MODEL

2. A discrepancy model of learning disabilities precludes early identification and creates a “*wait and fail*” policy.
 - ▶ The average age children are classified as reading-disabled is 9 years old (Shaywitz, 1998)
 - ▶ Children who have not developed phonological awareness by age 9 or 10 probably lost the capacity to do so (Rourke, 1984)
 - ▶ 74% of children classified as LD in 3rd grade remain so through 9th grade (Lyon, 1996)



IDEA 2004

- ▶ States no longer need to rely on a discrepancy model to identify learning disabilities, and should replace it by using a **R**esponse-**I**ntervention model.
- ▶ Gives school districts flexibility to craft a policy whereby students who do not respond to scientifically-based early literacy programs may be considered eligible for special education services.
- ▶ Requires districts with significant over-identification of minority students to consider eliminating IQ testing and establish procedures to reduce disproportional representation in special education.
- ▶ Focus on results, not the special education process.



THE GREAT PARADOX

- ▶ Office of Special Education Program sponsored an LD roundtable discussion in 2002.
- ▶ 10 different educational organizations including NASP were present..

Consensus statement on SLD included:

- (a) SLD is a valid condition hindering school performance.
- (b) SLD is a neurologically based condition.
- (c) Students with SLD show intra-individual differences in skills.
- (d) The ability/achievement discrepancy model should be discarded.
- (e) Eligibility for special education services must draw from multiple methods.



Common Features of RTI Implementation

- Multiple tiers of intervention
- Differentiated instruction/curriculum at all levels but particularly at upper tiers
- Instruction/intervention by specialists at tiers 2 and 3
- Interventions at different tiers are varied by duration, frequency, intensity, staff roles, time, etc.
- Eligibility decisions for special education based upon student's response to tiered interventions.

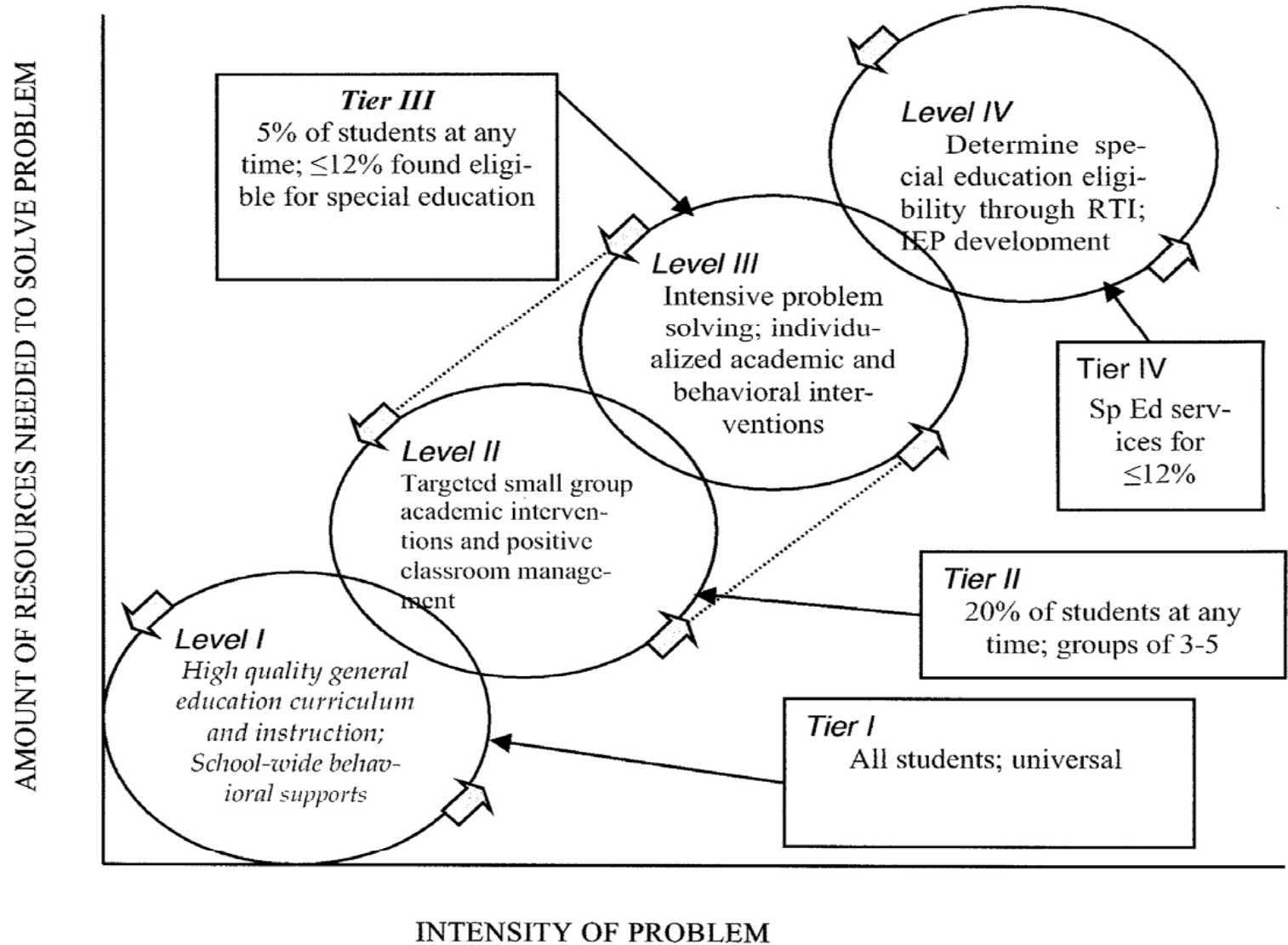


Key Elements of RTI

- Based upon high quality instruction
- Instruction is research-based
- School staff administer functional academic assessments
- Researched-based interventions
- Progress monitoring during interventions
- Enhanced treatment integrity as assessment linked with interventions
- Need for categorical labels minimized

Four-Tiered Model Response to Intervention [RTI]

Figure 1. NRC Multi-tiered Interventions (figure adapted from Heartland AEA Program Manual, 2002).



Reschly, R. J. (2003, December). *What if LD Identification Changed to Reflect Research Findings?* Paper presented at the National Research Center on Learning Disabilities Responsiveness-to-Intervention Symposium, Kansas City, MO.



Response to Intervention

Tier I:

- ▶ High Quality instruction and behavioral supports provided for all students in general education.
- ▶ Teacher implements a variety of research supported strategies.
- ▶ Continued progress monitoring using curriculum-based assessment .
- ▶ Teachers use differentiated instruction based upon data from ongoing assessments.

Response to Intervention

Tier II:

- ▶ Curriculum based measures determine which students continue to need assistance.
- ▶ Usually one specific indicator (e.g., fluency skills).
- ▶ Standard Protocol Interventions.
- ▶ Parents are informed and included in the planning and monitoring of progress in Tier II.
- ▶ General education teacher receives support from other qualified teachers in implementing interventions and progress monitoring.

Response to Intervention

Tier III:

- ▶ Progress monitoring of intervention over longer periods of time.
- ▶ Focus on multiple indicators in the curriculum (e.g., fluency skills, vocabulary, comprehension).
- ▶ Collaborative problem solving
- ▶ Parents are informed and included in the planning and monitoring of progress in Tier III. The school screening team (SST) involved in decision making.
- ▶ General education teacher receives support from specialists.



Response to Intervention

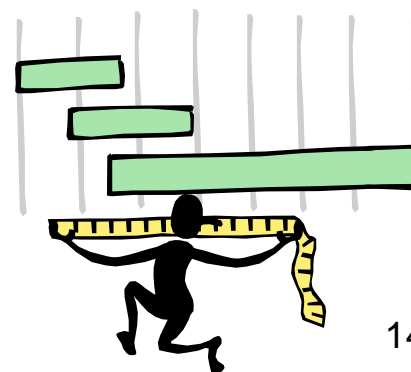
Tier IV:

- ▶ Parents are informed of their due process rights and consent is obtained for a comprehensive evaluation.
- ▶ Evaluation uses multiple sources of assessment data which may include data from standardized assessments as well as data collected in previous tiers.
- ▶ Intensive, systematic, and specialized instruction is provided in accordance with special education timelines and mandates.
- ▶ Procedural safeguards concerning evaluation determinations apply, as required by IDEA mandates.

RTI LIMITATIONS

(National Joint Commission on Learning Disabilities, - June 2005)

- ▶ *RTI alone is not sufficient to identify a learning disability.*
- ▶ Little agreement about what data to use, or the amount of time needed, to move between tiers.
- ▶ Limited data about specific instructional methods which are “*scientifically valid*” especially in fields outside of reading.
- ▶ Who monitors the process?



Does Rtl work?

- It works in behavioral health sciences
- More rigorous research needed in educational arena
- Rtl is a model based on the scientific method
 - Now applied to educational practice



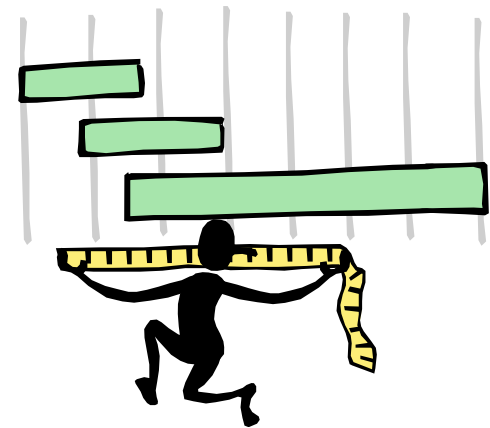
Empirically Supported Interventions

Disorders/ Behavior	Support for Treatment	Positive Effects – Consistent Evidence	Inconsistent Effects – Unproven	Comments
ADHD	Evidence-based treatments	<i>Psychosocial</i> Parent Management Clinical behavior therapy <i>Pharmacological Treatments</i> Methylphenidate (MPH)	Dietary replacement, exclusion; various vitamin, mineral, or herbal regimens; biofeedback; and Perceptual stimulation	Not necessary to select one treatment at the expense of the other.
Anxiety Disorders	Evidence-based treatments	<i>Psychosocial</i> Cognitive Behavioral Therapy Modeling CBT and Family Component CBT and Group Component Systemic Desensitization <i>Pharmacological Treatments</i> SSRIs	Herbal Supplements which may impede diagnosis	Phobias may be treated Through systematic desensitization. Parenting strategies and behavior management strategies are also effective. Medication should not be utilized as the sole intervention.

Adapted from VA Commission on Children & Youth: www.coy.state.va.us

CBM: What is it?

- CBM is a standardized method of evaluating student progress by directly assessing academic skills
- Indicators of “Academic Wellness”
 - 📏 Reading/Readiness skills
 - 📏 Math
 - 📏 Written expression
- Outcome Levels
 - Individual
 - Group
 - System





Curriculum-Based Measurement

- Fluency based measures where a minimum of three probes selected @ baseline.
- Assessment directly measures skill in question by establishing local norms.
- Focus on discrepancy from curriculum, not IQ.
- Discrepancy ratio of 2x from norm used to establish services
$$\frac{\text{Peer performance}}{\text{Student Performance}} = 50\% \text{ less}$$
- Links assessment with intervention.



CBM: How is it conducted?

- **Reading/Readiness skills**

- ▣ 1 minute readings using probes leveled for grade
- ▣ # of words/readiness skills read correctly per minute
- ▣ 1st time, 3 - 1 minute readings, select median = baseline
- ▣ 1" probes 1 or 2x (preferred)/wk thereafter
- ▣ Progress monitored, graphed, alter instruction based on response
- ▣ 1.5 - 2.0/wcpm.wk = expected increase

- ▣ **Math**

- ▣ 3-6" minute math probes, grade level
- ▣ Metric is number of digits or problems correct per minute
- ▣ Probes administered bi-weekly
- ▣ ¼ digit/wk or 1 per month = expected increase

- ▣ **Spelling/Written Expression**

- ▣ 3 minute writing probe
- ▣ # of correct letter or word sequences per minute
- ▣ Measured weekly
- ▣ Fluency increase not able to be predicted yet



CBM Summary

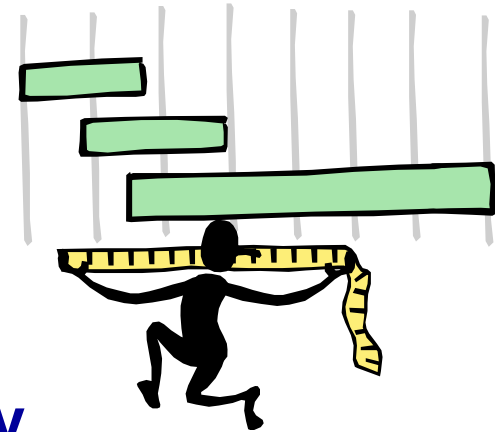
- **Screen/identify at-risk students who may need additional services**
- **Assist general education teachers with planning effective instruction within their classrooms**
- **Monitor and document student progress to drive instruction**
- **Plan and monitor intervention response for students in regular or special education**
- **Communicate with parents or other professionals about students' progress**
- **Provide information for data-based decisions regarding eligibility and degree of need for special services**



SUMMARY OF CBM

► -Advantages-

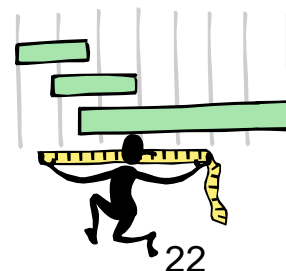
- * Enhanced ecological validity
- * Quicker and cheaper
- * Actually measures academic skills
- * Good for intervention and exit decisions
- * Excellent for monitoring progress
- * Linked to a problem solving model:



SUMMARY OF CBM

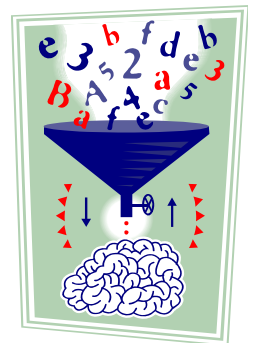
► -Disadvantages-

- * Assesses limited aspects of academics.
- * Not a diagnostic approach.
- * Answers WHERE or WHAT, not WHY!
- * Some proponents discount the need or use of nationally norm referenced tests including psychological processing tests.
- * Some proponents of CBM call for the elimination of LD as a diagnostic category.

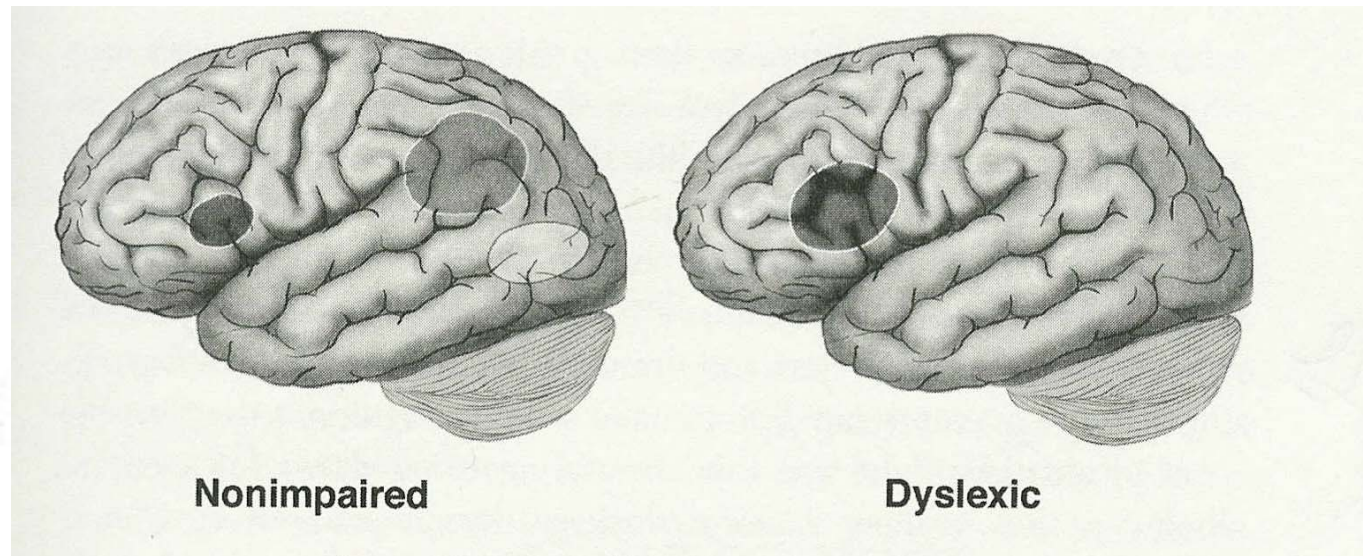


The New Psychological Assessment

- ▶ Focus on *why* the child has not been successful in school as opposed to IQ scores.
- ▶ Reports need to describe the child and not the tests.
- ▶ Less emphasis on whether or not the student qualifies for special education services.
- ▶ Examine the cognitive and emotional strengths and weaknesses of the child and link to specific educational strategies and interventions.



Neural Circuitry of Reading Disorders



- ▶ **Nonimpaired readers activate primarily posterior portions of left hemisphere.**
- ▶ **Impaired readers under-activate posterior regions and activate primarily frontal areas.**

3-Headed Monster of Reading

DECODING

FLUENCY

COMPREHENSION

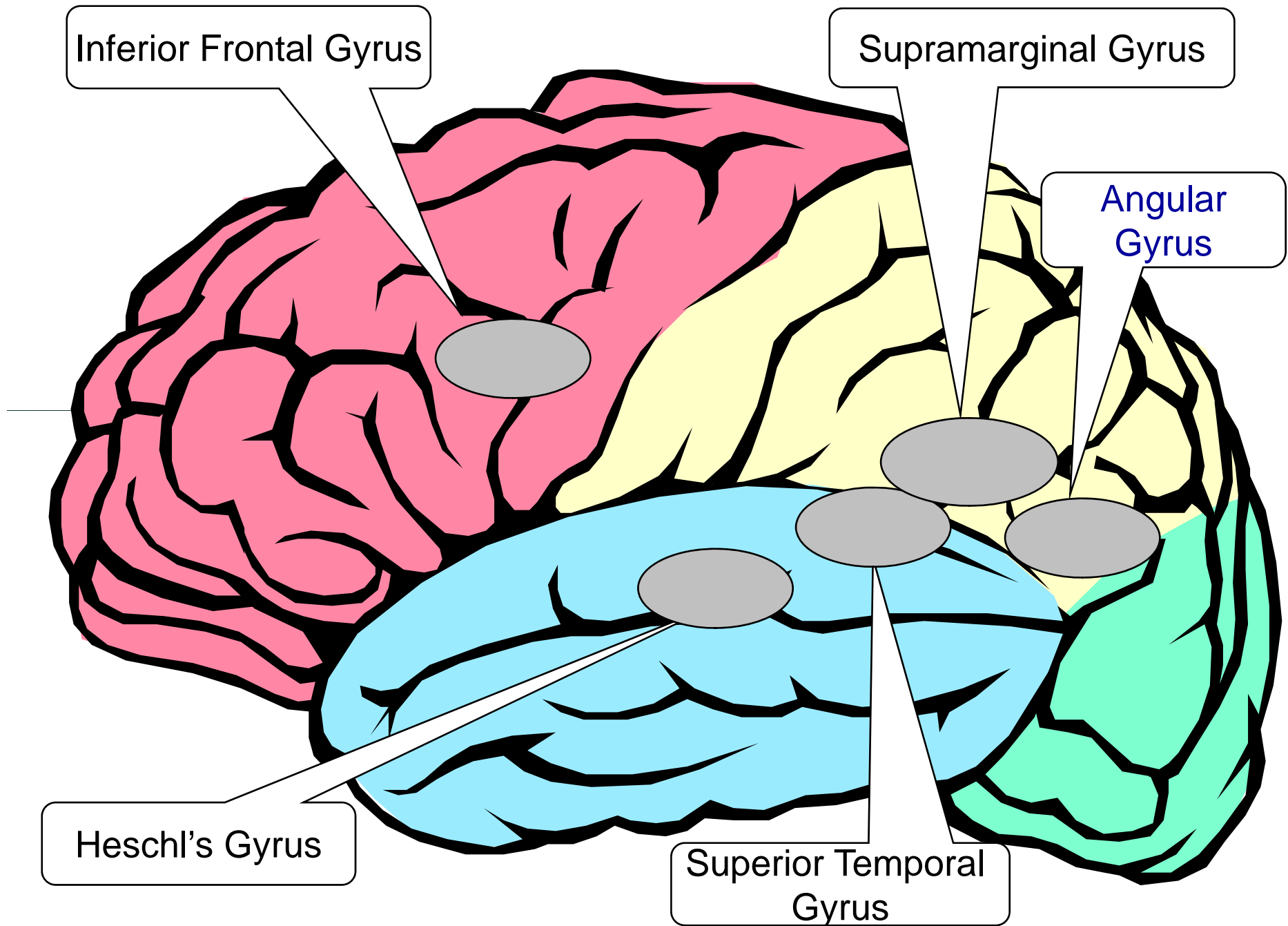


SUBTYPES OF DYSLEXIA

KEY BRAIN REGIONS IN DECODING

- (1) Heschl's Gyrus- auditory perception and discrimination.
- (2) Superior Temporal Gyrus – modulates the 44 phonemes of the English Language.
- (3) Angular Gyrus – cross modal association area mapping symbols to sounds.
- (4) Supramarginal Gyrus – cross modal association area underlying the spatial appreciation of sounds.
- (5) Inferior Frontal Gyrus – end point for inner articulation area.

Dorsal Stream: Phonological word assembly..SLOW!!



SUBTYPES OF DYSLEXIA

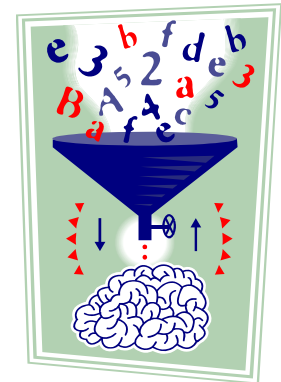
Developmental Sequence of Phonological Processing



<u>Activity</u>	<u>Age</u>	<u>Example</u>
(1) Response to Rhymes	3 - 4	<i>“nursery rhyme”</i>
(2) Classifying Phonemes	4 – 5	<i>“book, look, etc.”</i>
(3) Segmenting Words	5 – 6	<i>“KT to spell cat”</i>
(4) Phoneme Segmentation	6 – 7	<i>“tap out phonemes”</i>
(5) Phoneme Deletion	6 – 8	<i>“say sting without the t”</i>

90 Minute Reading Evaluation

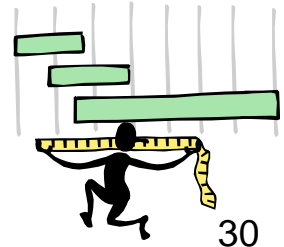
- (1) Intelligence Measures**
- (2) Phonological Awareness**
- (3) Rapid Naming**
- (4) Working Memory**
- (5) Reading Fluency**
- (6) Visual/Spatial Skills**
- (7) Executive Functioning**
- (8) Family History**



SUMMARY OF NEUROPSYCH MODEL

► -Advantages-

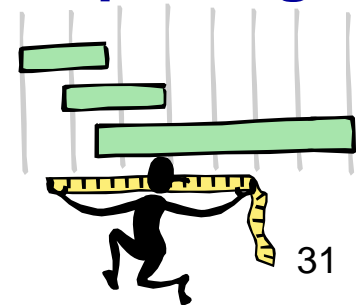
- * A thorough and complete assessment of academic learning.
- * Provides diagnostic information.
- * Answers the WHY question!
- * Constructs are scientifically based.
- * Methodology allows for differential diagnosis.



SUMMARY OF NEUROPSYCH MODEL

► -Disadvantages-

- * Most school psychologists not trained in school neuropsych assessment.
- * Very time consuming.
- * Traditionally, not linked to interventions.
- * Cross battery assessment is very expensive.
- * School personnel have difficulty interpreting the data.



Combining the Contributions: Neuropsychological and CBM Data

Yin Yang Assessment & Intervention





NATIONAL READING PANEL CONCLUSIONS (K - 1st grade)

- (1) The younger the child, the better the outcome.**
- (2) The “*at-risk*” child responds best to small group instruction (3:1), with phonological awareness training being combined with explicit phonics.**
- (3) Highly trained teachers achieve the best results.**
- (4) Frequency of instruction (4-5 days per week) was more effective than sporadic instruction (2 days per week).**
- (5) Gains were maintained in most children at long-term follow up.**
- (6) The following characteristics were associated with poor outcome:**
 - a) attention or behavior concerns**
 - b) low socioeconomic status**
 - c) poor verbal skills**
 - d) poor rapid naming skills**



NATIONAL READING PANEL CONCLUSIONS (2nd - 6th grades)

- (1) Readers at this age respond to explicit phonological instruction, though gains were not as strong as with younger children.**
- (2) These readers were less responsive to explicit phonological instruction, though did better in one-to-one or small group instruction.**
- (3) More intensive work for a longer duration required.**
- (4) Spelling and fluency did not improve much, though some improvement with reading comprehension.**
- (5) Computer instruction served as an effective aid, but was not effective by itself.**
- (6) The following characteristics were associated with poor outcome:**
 - a) attention or behavior concerns**
 - b) low socioeconomic status**
 - c) poor verbal skills**
 - d) poor rapid naming skills**

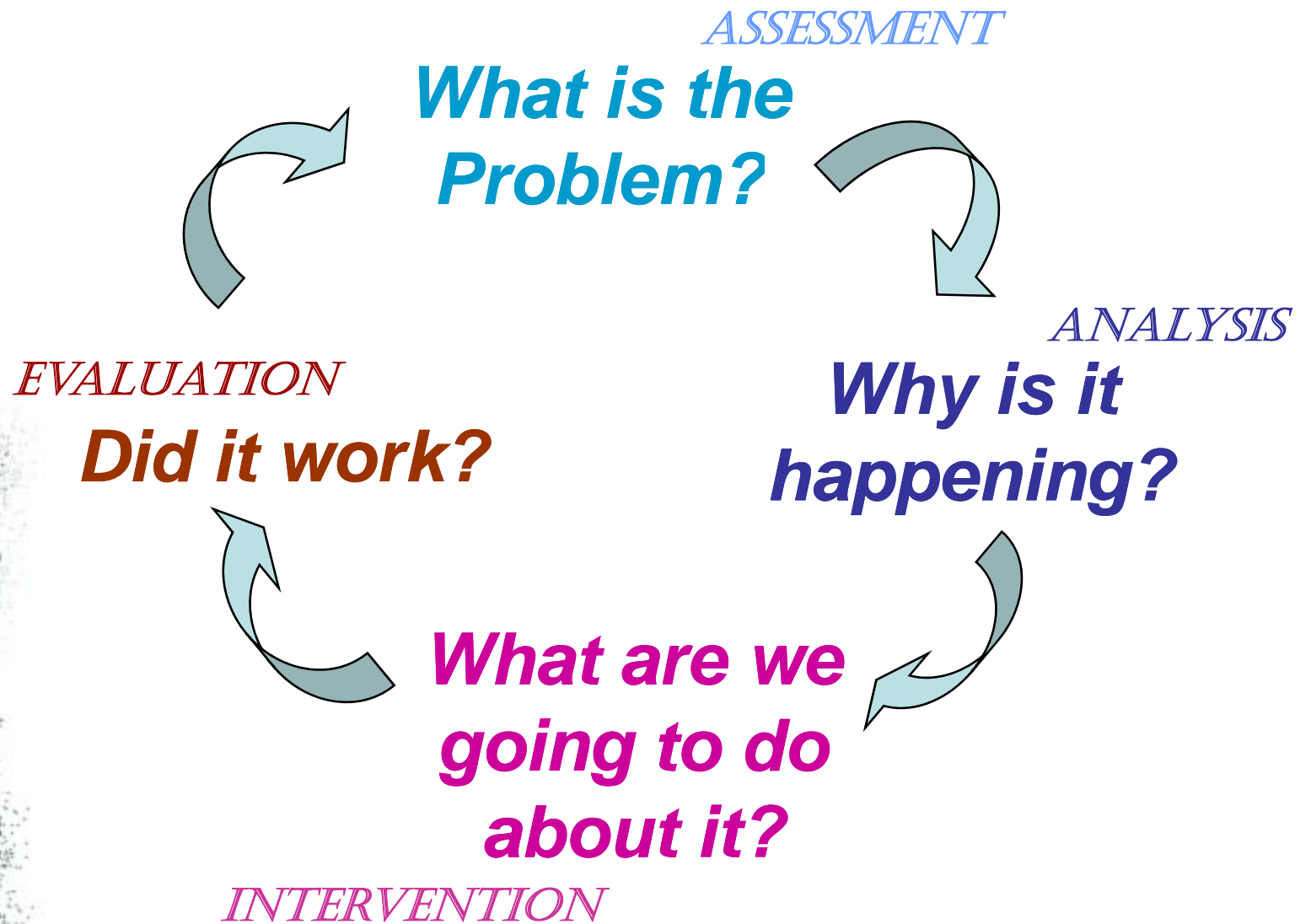
NATIONAL READING PANEL CONCLUSIONS

TEXT COMPREHENSION: (Preliminary Findings)

- Fluency is better achieved by repeated guided oral reading than by silent reading practice.
- Vocabulary instruction should be taught by both direct and indirect methods, with computer programs as merely adjuncts.
- Comprehension is developed by fluent word and vocabulary strength. In addition, meta-cognitive strategies should be used to assist the child in connecting with the text.



Problem Solving Logic



ASSESSMENT

What is the Problem?



CBM

Phonological Awareness

- Initial Sound Fluency
- Phoneme Segmentation Fluency

Alphabetic Principle

- Nonsense Word Fluency

Automaticity

- Oral Reading Fluency

NEUROPSYCH

Phonological Processing

- Rapid Automatic Naming
- Response to Rhymes
- Classifying Phonemes
- Segmenting Words
- Phoneme Segmentation
- Phoneme Deletion

Working Memory

Executive Functioning

Vocabulary
Comprehension





ANALYSIS

What is happening?

CBM

Level

Discrepancy

Variability

Specific Error
Analysis

Rate / Slope
(Progress Monitoring)

NEUROPSYCH

Level

Patterns

Left-Right

Pathognomonic
Signs

Rate of
Improvement
(Cognitive Integrity)



INTERVENTION

What are we going to do about it?

CBM

Direct explicit
instruction on five
essential elements of
reading (Core)

Supplemental
Reading Instruction

Intensive Reading
Instruction

NEUROPSYCH

Subtype:

- (1) Dysphonetic
- (2) Surface
- (3) Mixed
- (4) Comprehension

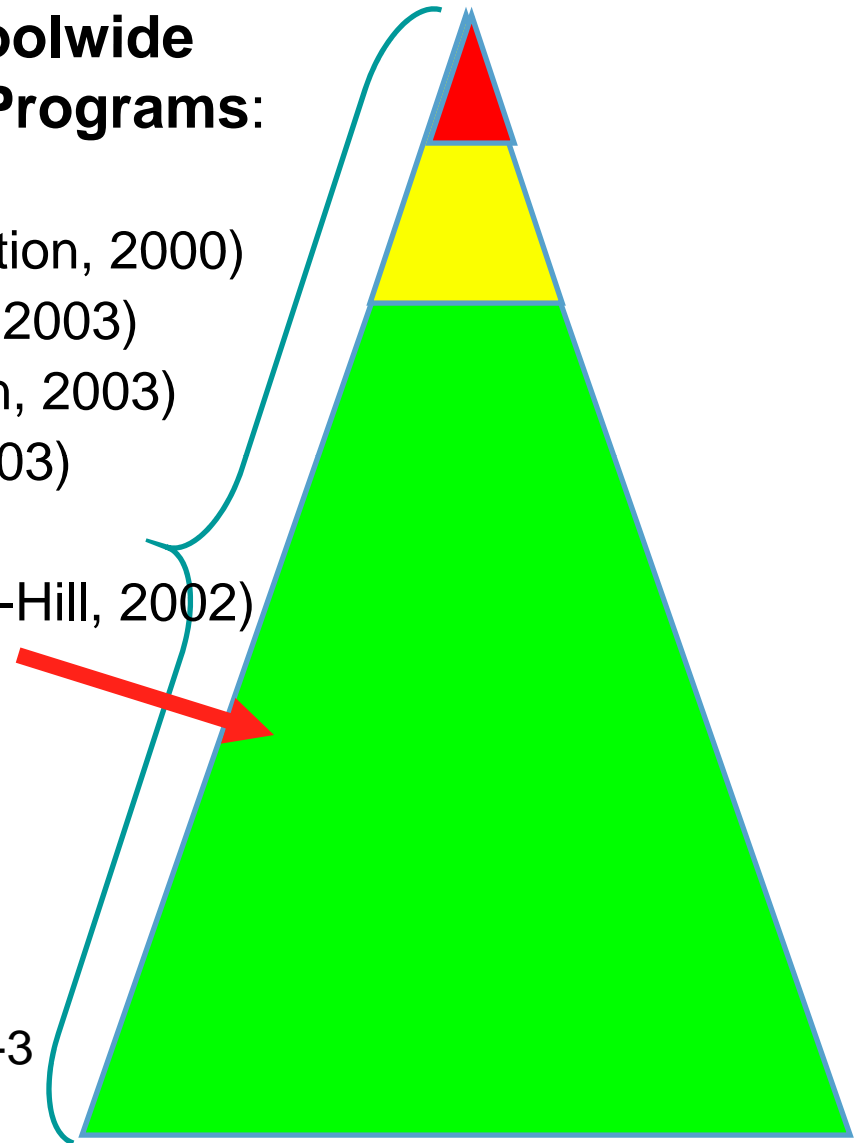
Developmental Age

Interventions based upon
subtype

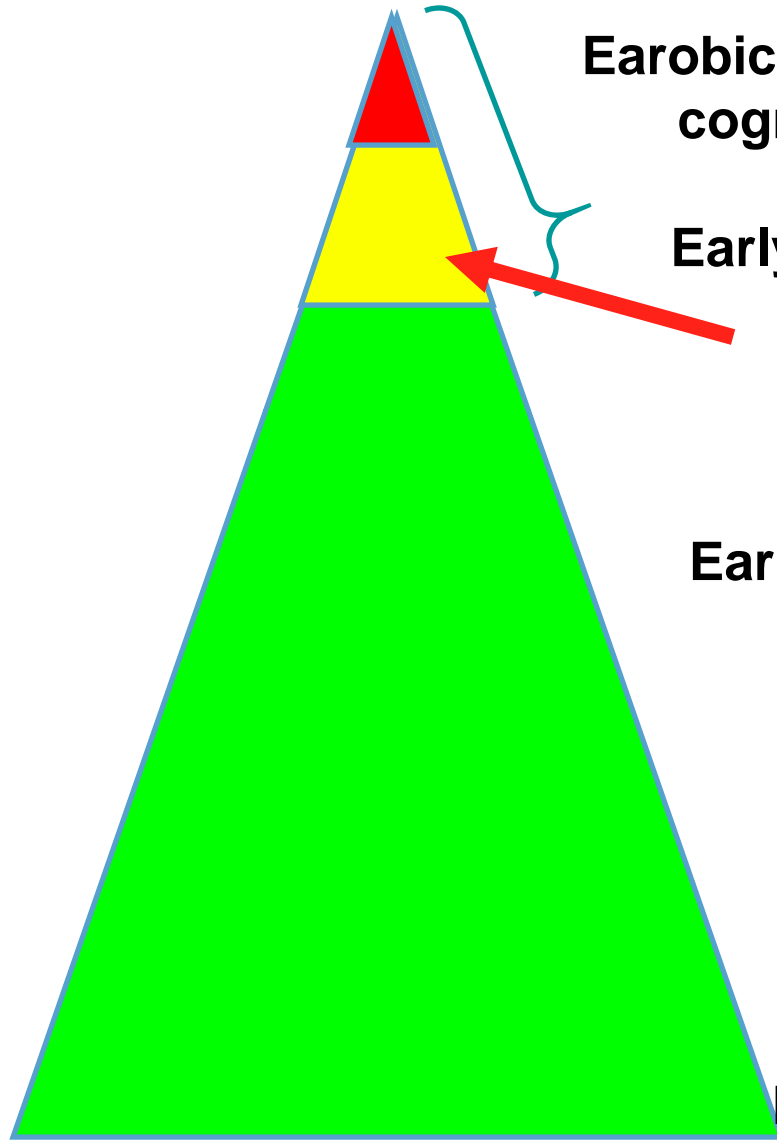
TIER 1: Benchmark/Schoolwide Benchmark/Core Reading Programs:

1. Rigby Literacy (Harcourt Rigby Education, 2000)
2. Trophies (Harcourt School Publishers, 2003)
3. The Nation's Choice (Houghton Mifflin, 2003)
4. Macmillan/McGraw-Hill Reading (2003)
5. Open Court (SRA/McGraw-Hill, 2002)
6. Reading Mastery Plus (SRA/McGraw-Hill, 2002)
7. Scott Foresman Reading (2004)
8. Success For All (1998-2003)
9. Wright Group Literacy (2002)

Reviewed by: Oregon Reading First
Comprehensive: Addressed all 5 areas
and included at least grades K-3



TIER 2: Strategic Strategic/Supplemental Reading Programs:



**Earobics (phonics/phonemic awareness;
cognitive concepts)**

Early (Soar to) Success (Houghton Mifflin)

Read Well (Sopris West)

Reading Mastery (SRA)

Early Reading Intervention (Scott Foresman)

Great Leaps (Diamuid, Inc.)

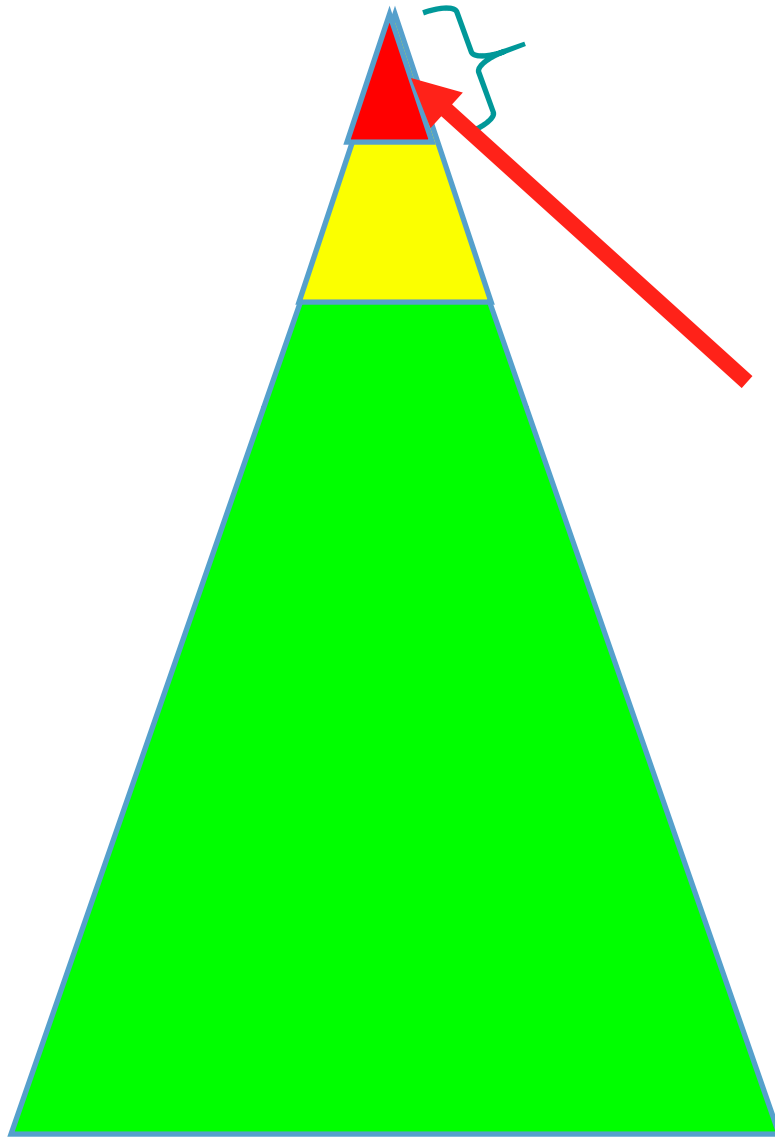
REWARDS (Sopris West)

Ladders to Literacy (Brookes)

Reading Recovery

Peer Assisted Learning Strategies (PALS)

TIER 3 or 4: INTENSIVE Reading Programs



Read 180 (Scholastic)

Alphabetic Phonics (Orton-Gillingham)

Corrective Reading (SRA)

Language! (Sopris West)

Wilson Reading (Foundations)

Reading Mastery (DISTAR)

Read Naturally (Fluency)

**REWARDS (Fluency, Comp. and Vocab.
in Plus Program)**

Soar to Success (comp.)



EVALUATION

How well did it work?

CBM

Phonological Awareness

(ISF, PSF)

Alphabetic Principle

(NWF)

*Automaticity with
Connected Text*

(ORF)

NEUROPSYCH

Phonological Processing

Fluency

Comprehension

Vocabulary

Comprehension



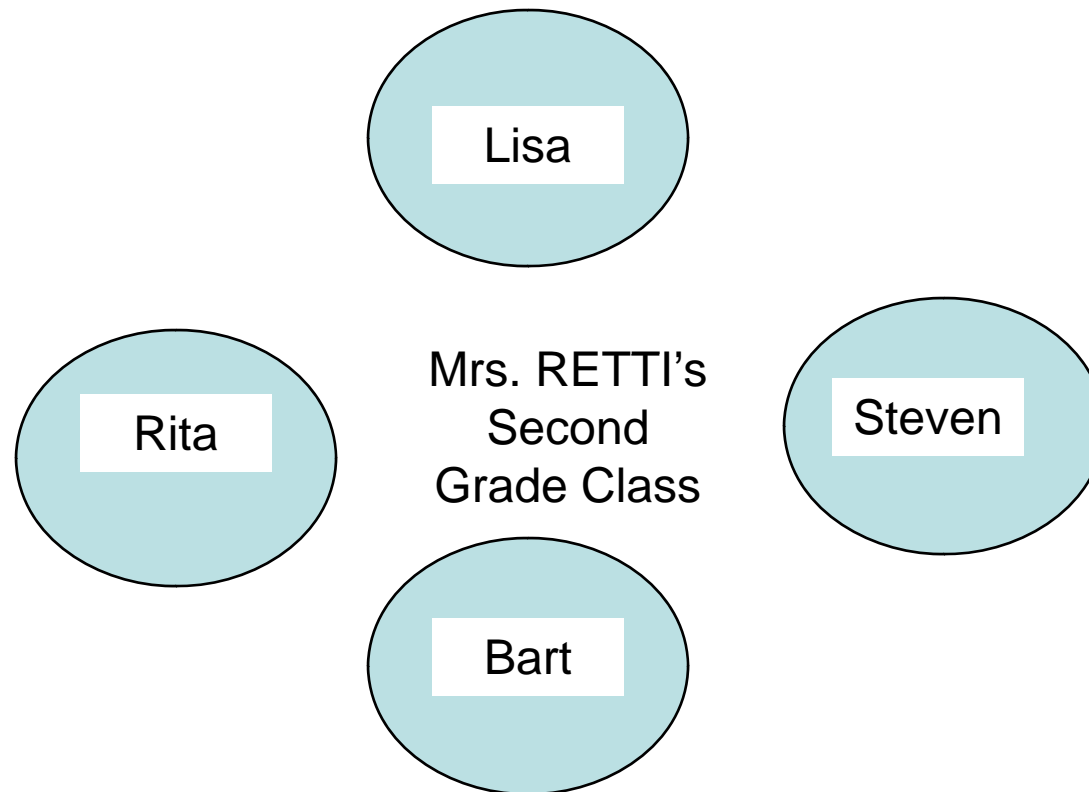
The background of the slide is a photograph of a green chalkboard. Two pieces of pink chalk are lying on the left side of the board. There are some faint, white chalk markings on the board, including a curved line and some scribbles.

Case Studies

Green Light, Yellow Light,
Red Light

or

The Road to Special Ed...
or Not?



Case Studies developed by Ed Shapiro, Ph.D. Lehigh University (2005)
PaTTAN Rtl Overview Training (used with permission)



District Rtl Elements In Place

- Scientifically supported reading curriculum
 - Open Court
- Fidelity of implementation
 - Quarterly observation of teachers implementing Open Court Reading program
- Benchmarking assessment of all students
 - Previous year only 6 of 60 first graders (10%) failed to achieve benchmarks
- Presence of grade level teams for data analysis
 - Teams co-lead by school psychologist and reading specialist examine assessment data to screen for those needing strategic intervention plans
- Administrative support to pool resources
 - Reg ed, Sp ed, Remedial ed are one combined resource

Shapiro (2005)



Key Info

- Level: Benchmark Levels for Measure
 - DIBELS or Local Norm (some risk)
 - **Fall = 26 - 44**
 - **Winter = 52 - 68**
 - **Spring = 70 - 90**
 - Comprehension checks = 50% (some risk)
- Learning Rate: Expected Gain Over Time (slope)
 - Known rates based on national studies or statewide rates
 - Second grade students = **1.5 words correct/week** (Fuchs)

Shapiro (2005)

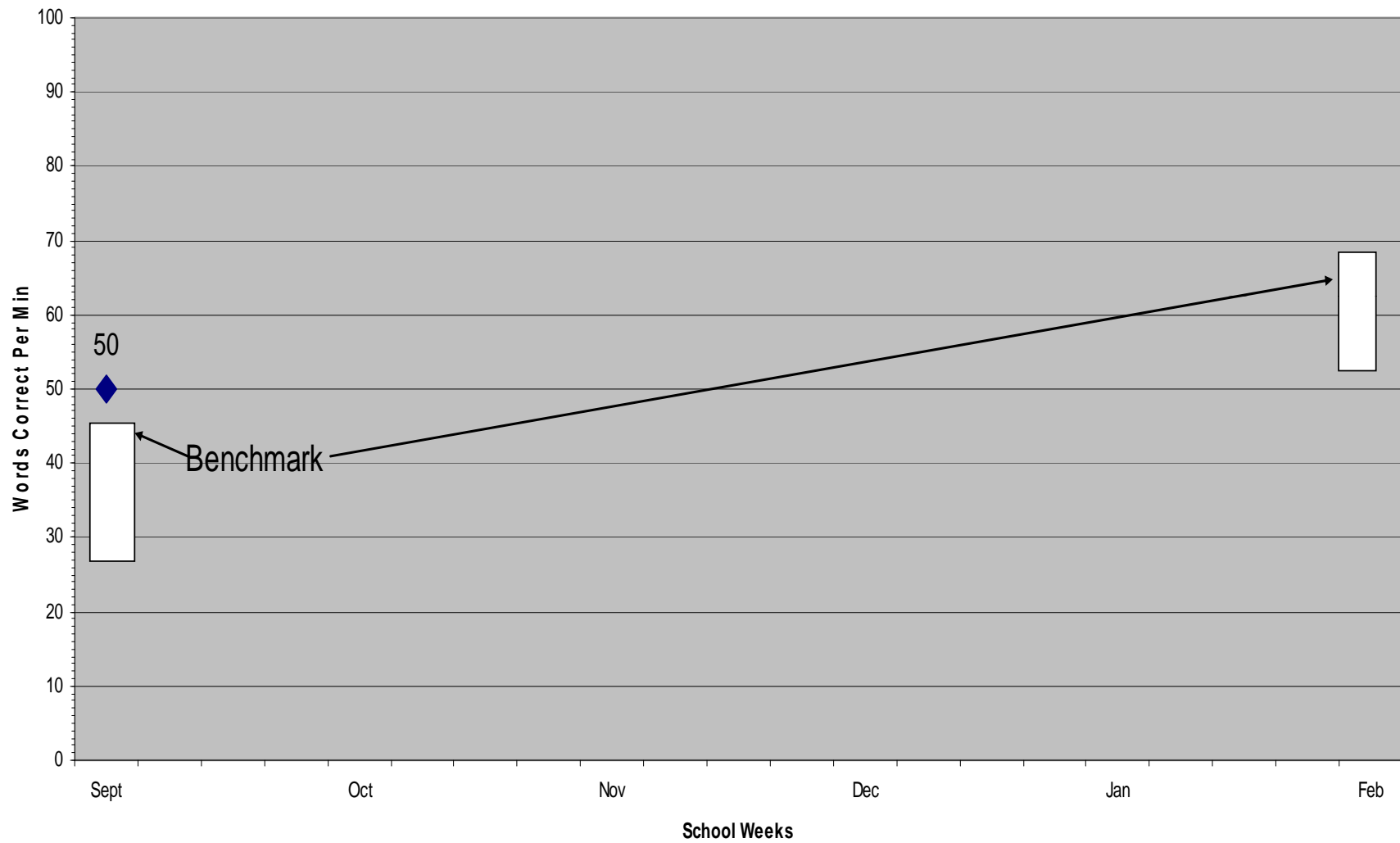


Lisa

- Second grade student
- Beginning of school year
- Regular Education
- Scores at 50 wcpm in second grade material
- Teacher judges (based on in-class observation/evaluation) comprehension to not be substantially different from ORF

Shapiro (2005)

LISA

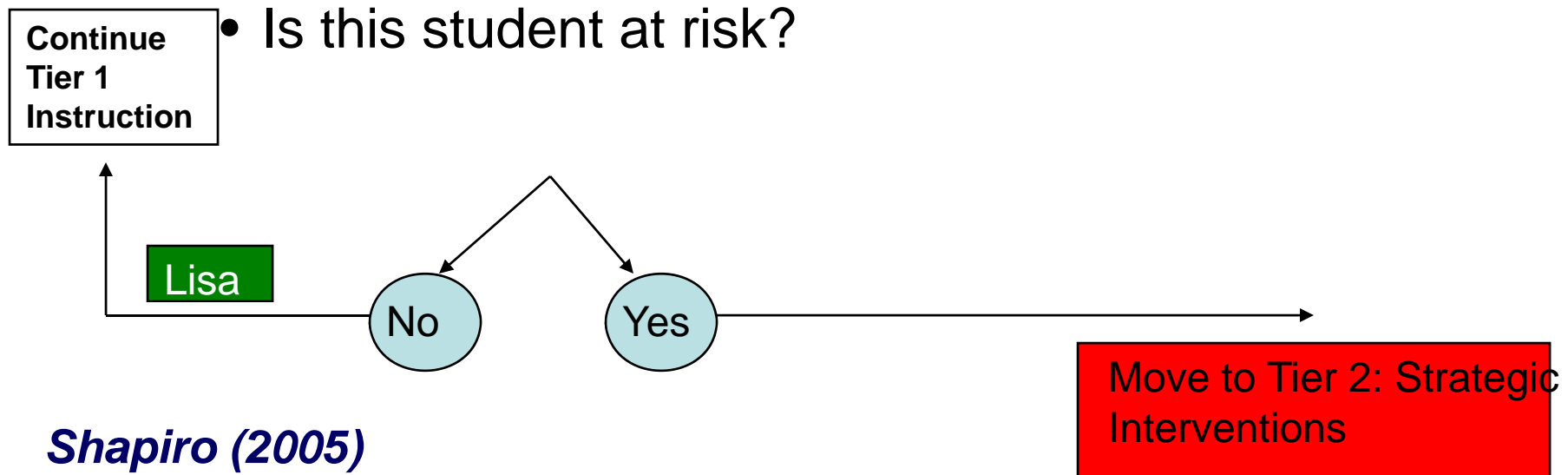


Shapiro (2005)

Decision Model at Tier 1- General Education Instruction

- Step 1: Screening

- ORF = 50 wcpm, fall benchmark for some risk = 44 wcpm
- Comprehension skills are judged as at levels equal to ORF by her teacher
- Current Gen Ed Instruction is Working
- Is this student at risk?



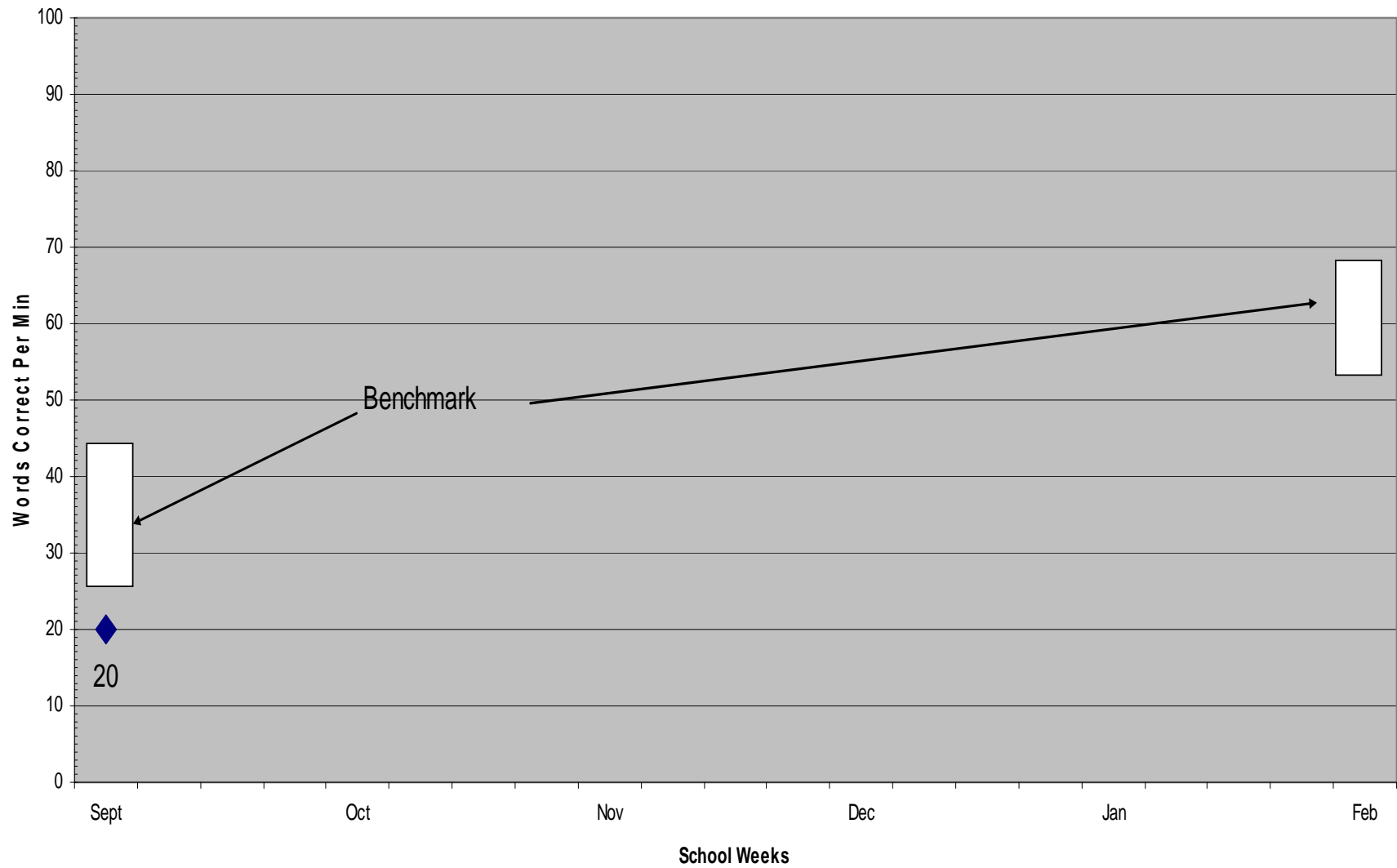


Rita

- Second grade student
- Beginning of school year
- Regular Education
- Scores at 20 wcpm in second grade material
- Teacher judges (based on in-class observation/evaluation) comprehension to not be substantially different from ORF

Shapiro (2005)

Rita

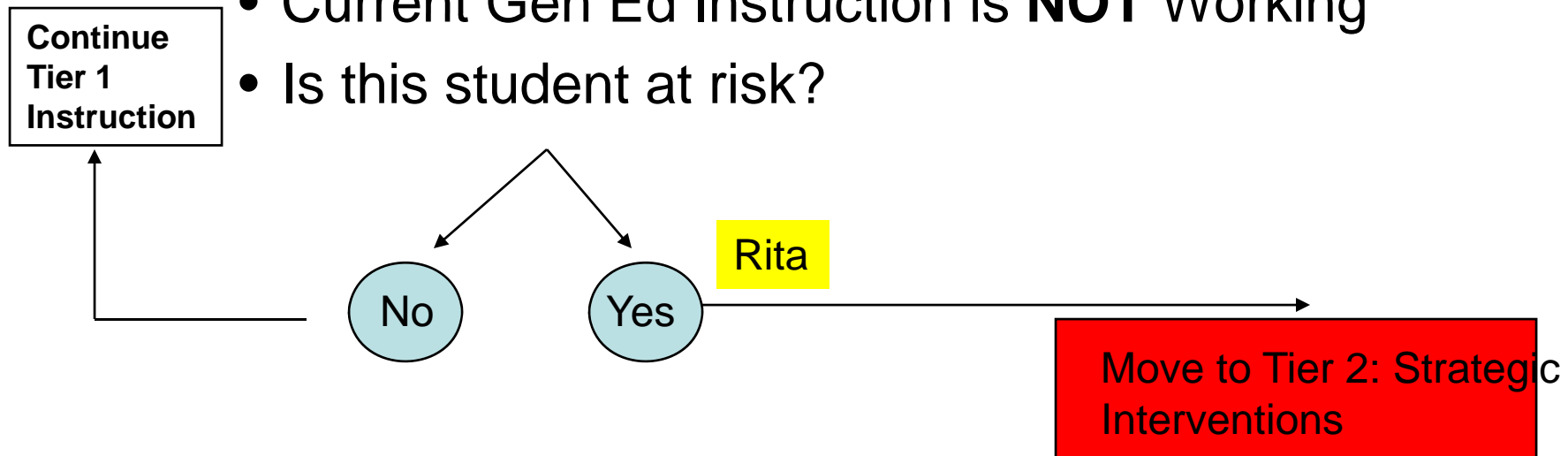


Shapiro (2005)

Decision Model at Tier 1- General Education Instruction

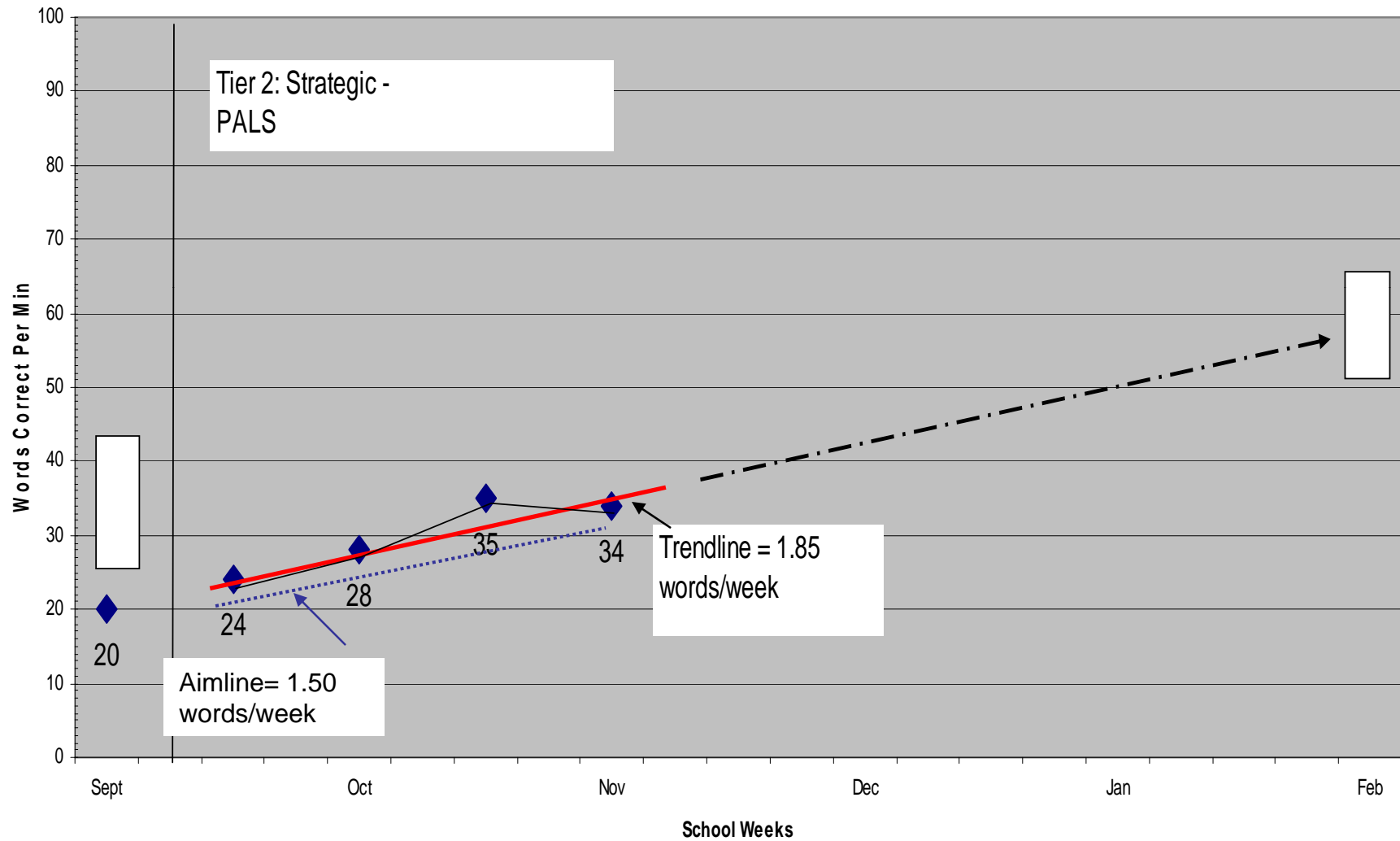
- Step 1: Screening

- ORF = 20 wcpm, fall benchmark for some risk = 44 wcpm
- Comprehension deficits in all 4 of 5 areas are noted
- Current Gen Ed Instruction is **NOT** Working
- Is this student at risk?



Shapiro (2005)

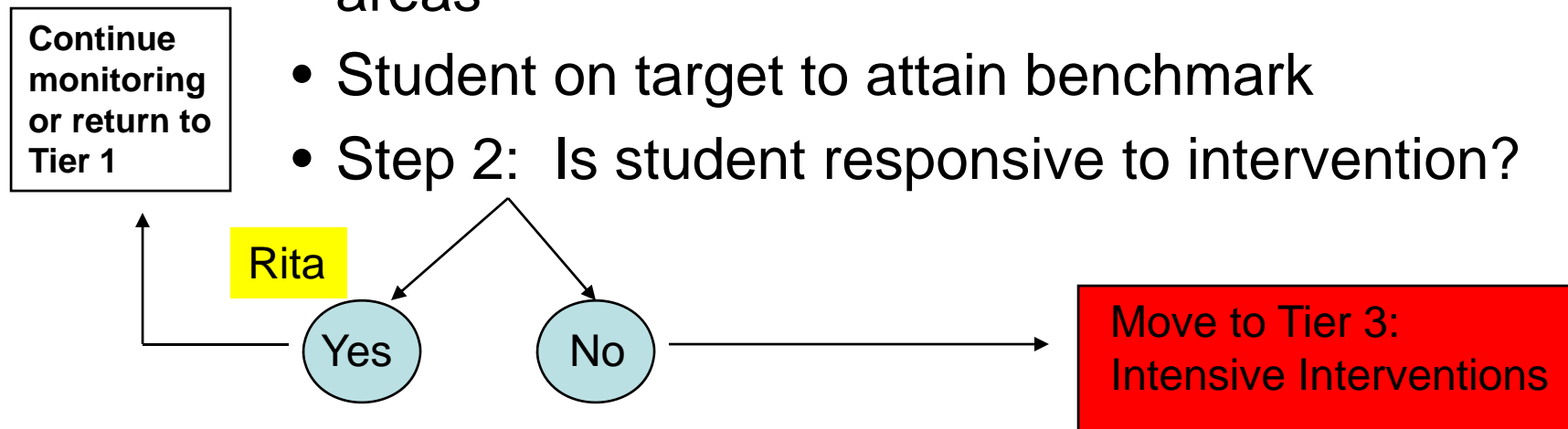
Rita- Tier 2



Shapiro (2005)

Decision Model at Tier 2- Strategic Intervention & Instruction

- ORF = 34 wcpm, winter benchmark (still 8 weeks away) for some risk = 52 wcpm
- Target rate of gain over Tier 1 assessment is 1.5 words/week
- Actual attained rate of gain was 1.85 words/week
- Gains above benchmark in 4 of 5 comprehension areas
- Student on target to attain benchmark
- Step 2: Is student responsive to intervention?



Shapiro (2005)

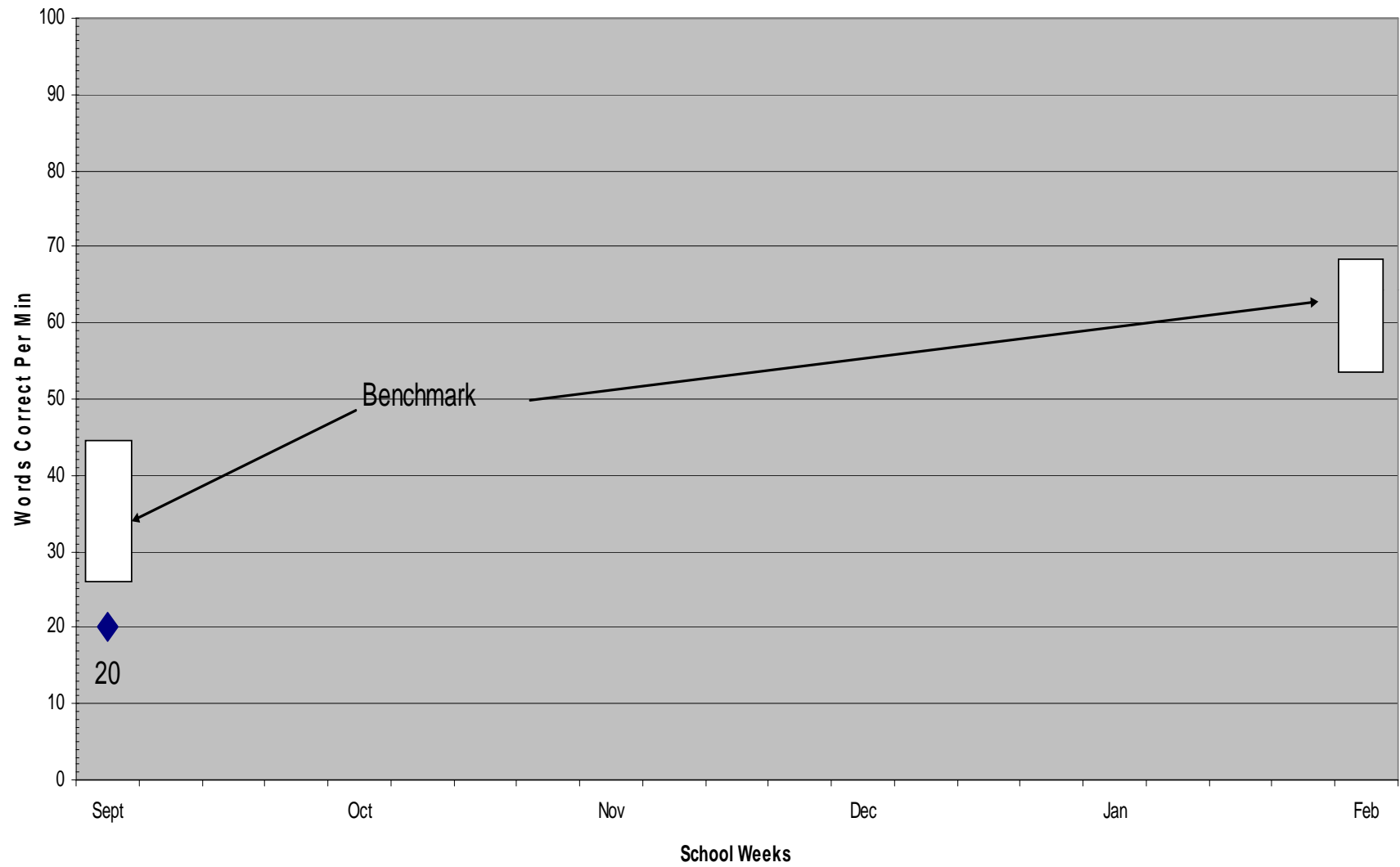


Steven

- Second grade student
- Beginning of school year
- Regular Education
- Scores at 20 wcpm in second grade material
- Teacher judges (based on in-class observation/evaluation) comprehension to not be substantially different from ORF

Shapiro (2005)

Steven

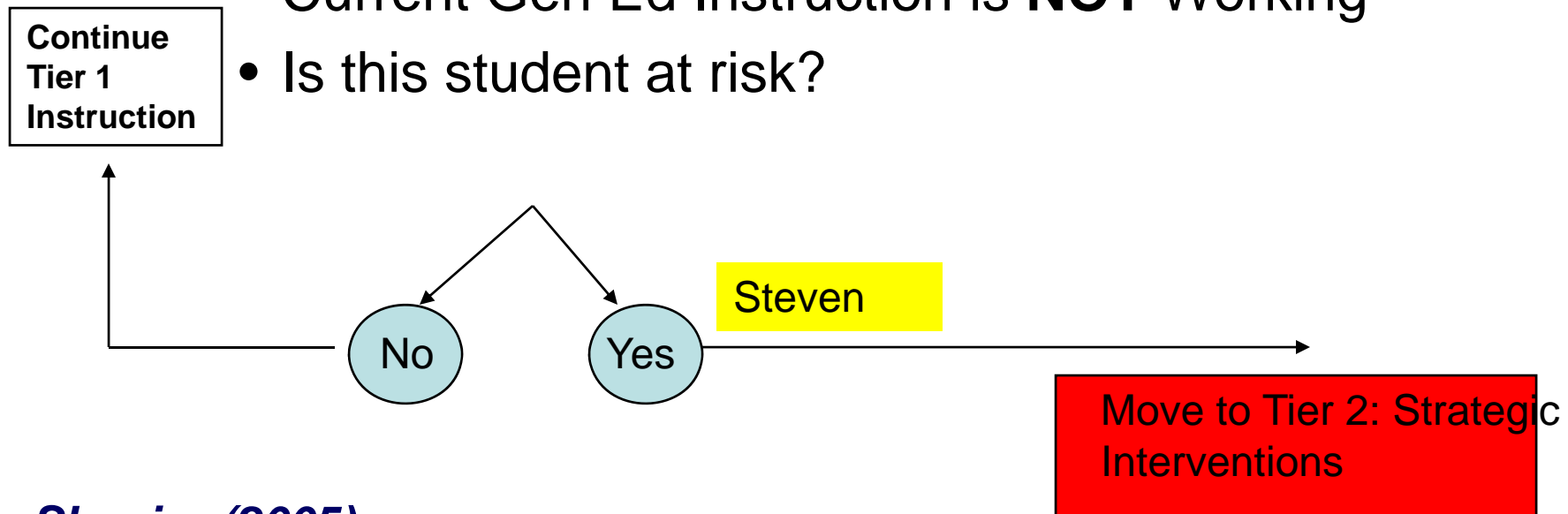


Shapiro (2005)

Decision Model at Tier 1- General Education Instruction

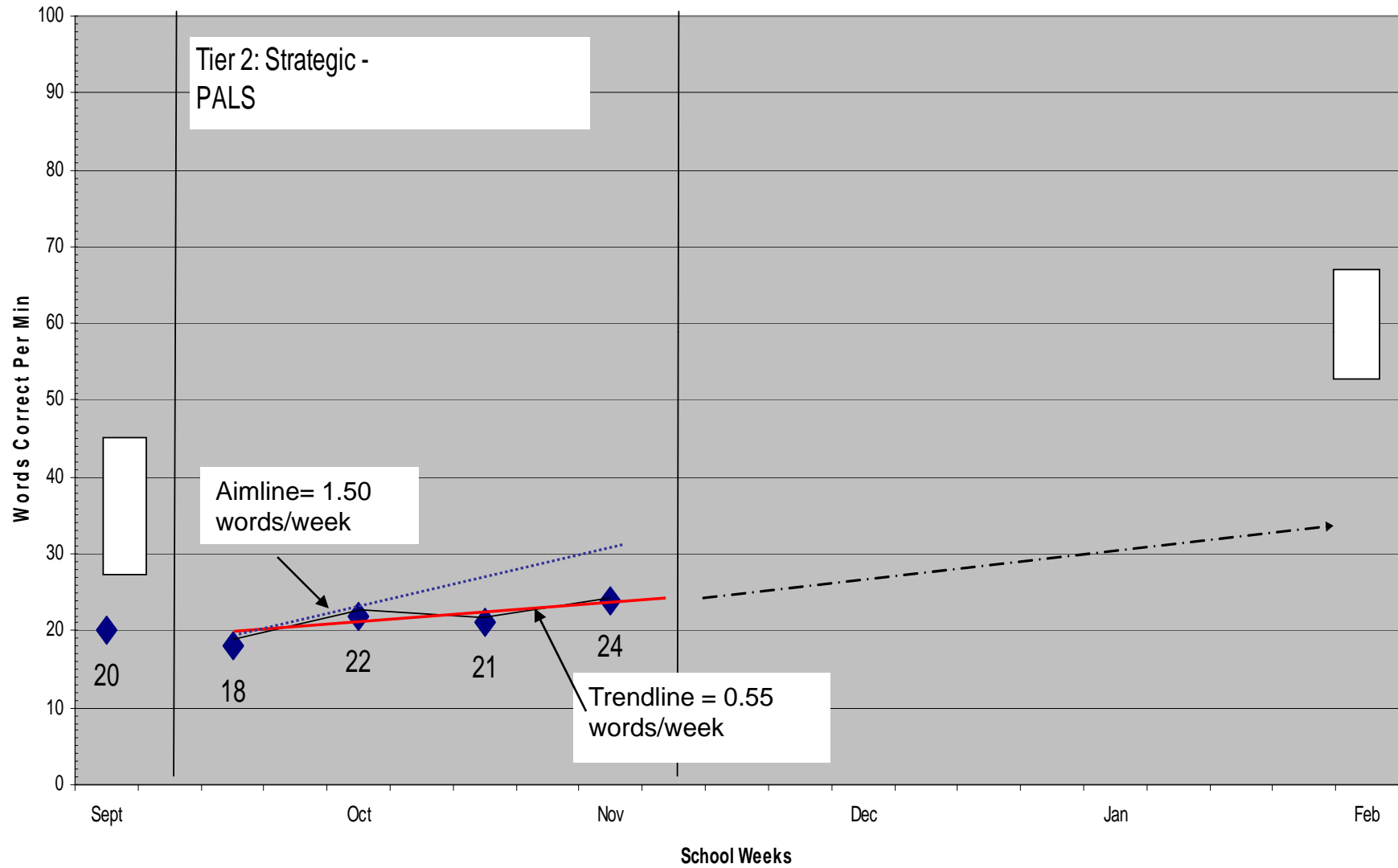
– Step 1: Screening

- ORF = 20 wcpm, fall benchmark for some risk = 44 wcpm
- Comprehension screen also shows deficits in all 5 areas
- Current Gen Ed Instruction is **NOT** Working
- Is this student at risk?



Shapiro (2005)

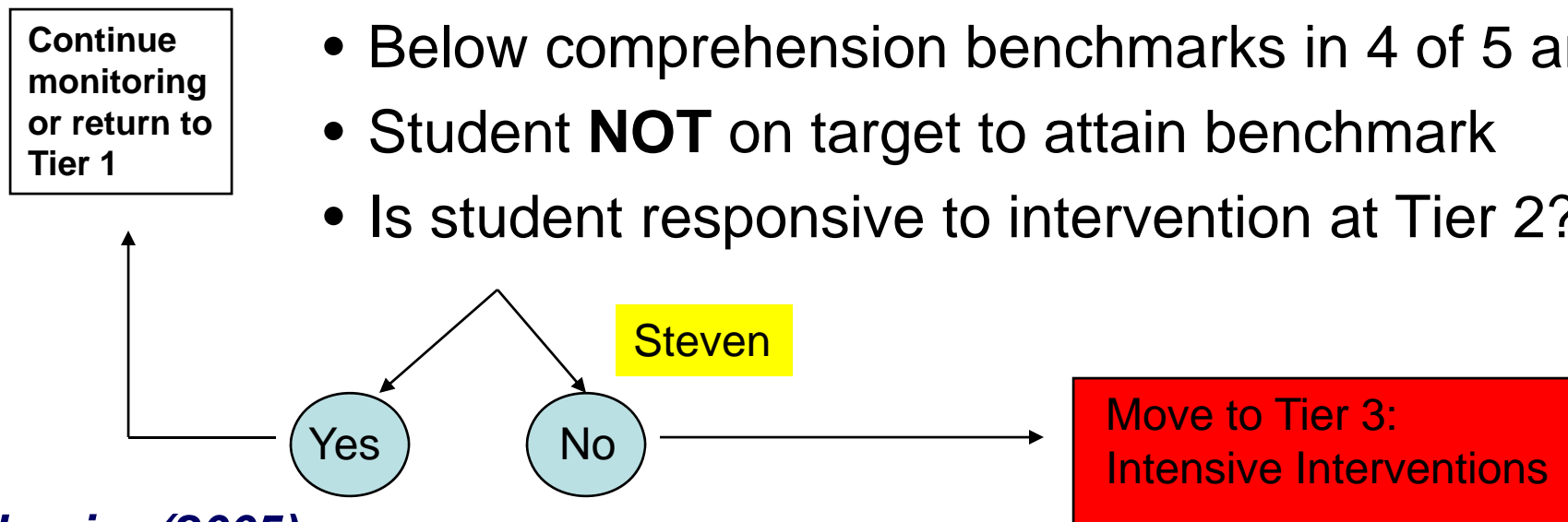
Steven



Shapiro (2005)

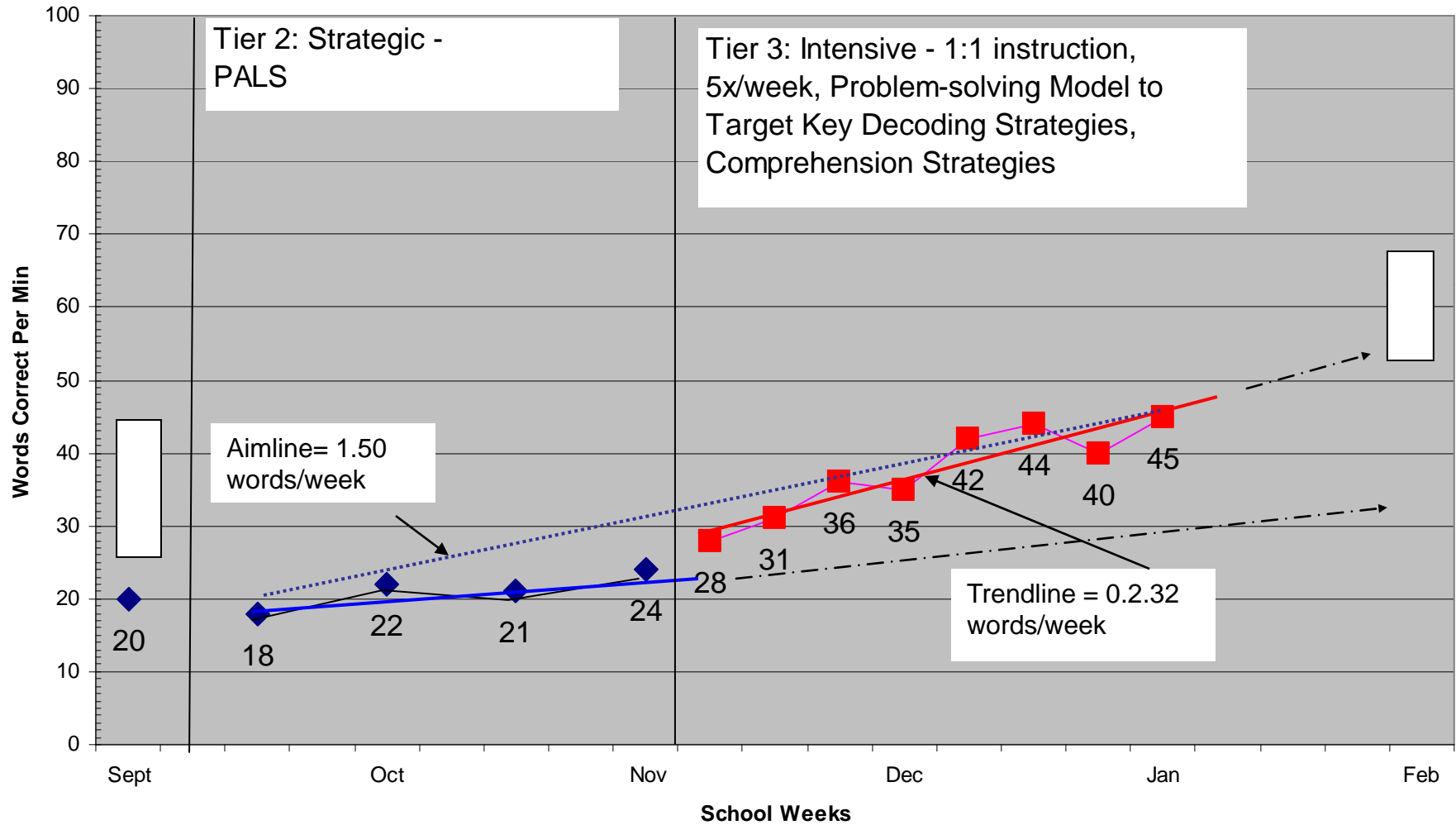
Decision Model at Tier 2- Strategic Intervention & Instruction

- Step 2: Is student responsive to intervention?
 - ORF = 24 wcpm, winter benchmark (still 8 weeks away) for some risk = 52 wcpm
 - Target rate of gain over Tier 1 assessment is 1.5 words/week
 - Actual attained rate of gain was 0.55 words/week
 - Below comprehension benchmarks in 4 of 5 areas
 - Student **NOT** on target to attain benchmark
 - Is student responsive to intervention at Tier 2?



Shapiro (2005)

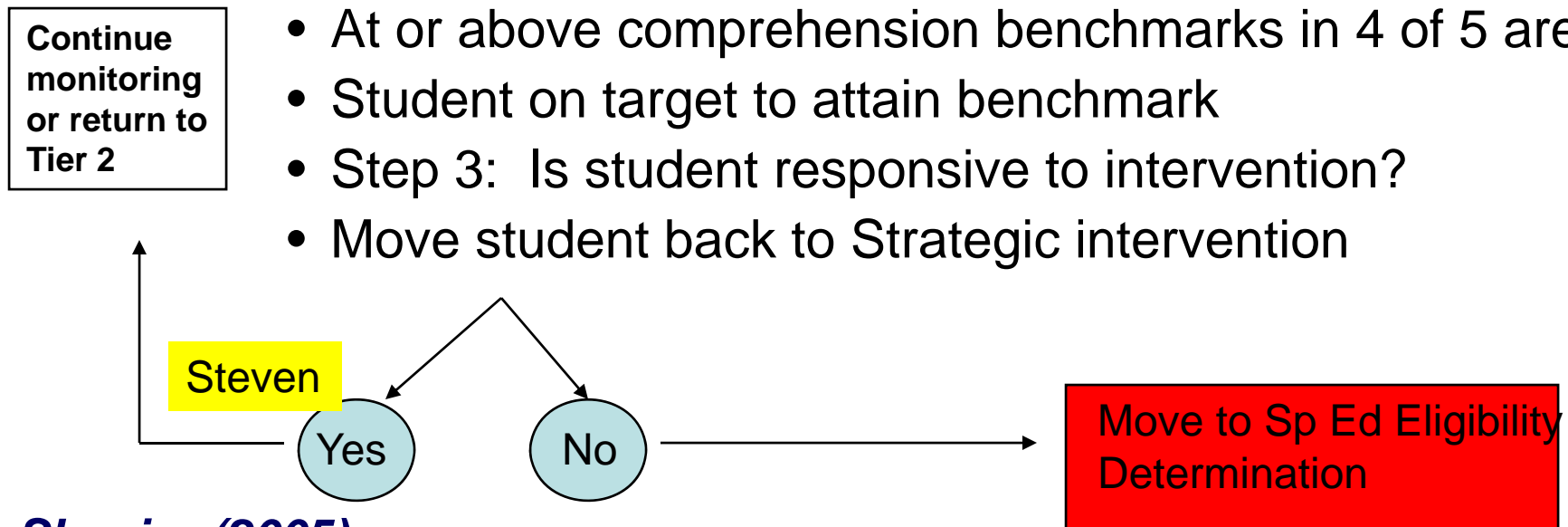
Steven



Shapiro (2005)

Decision Model at Tier 3- Intensive Intervention & Instruction

- Step 3: Is student responsive to intervention at Tier 3?
 - ORF = 45 wcpm, winter benchmark (still 4 weeks away) for some risk = 52 wcpm
 - Target rate of gain over Tier 2 assessment is 1.5 words/week
 - Actual attained rate of gain was 2.32 words/week
 - At or above comprehension benchmarks in 4 of 5 areas
 - Student on target to attain benchmark
 - Step 3: Is student responsive to intervention?
 - Move student back to Strategic intervention



Shapiro (2005)

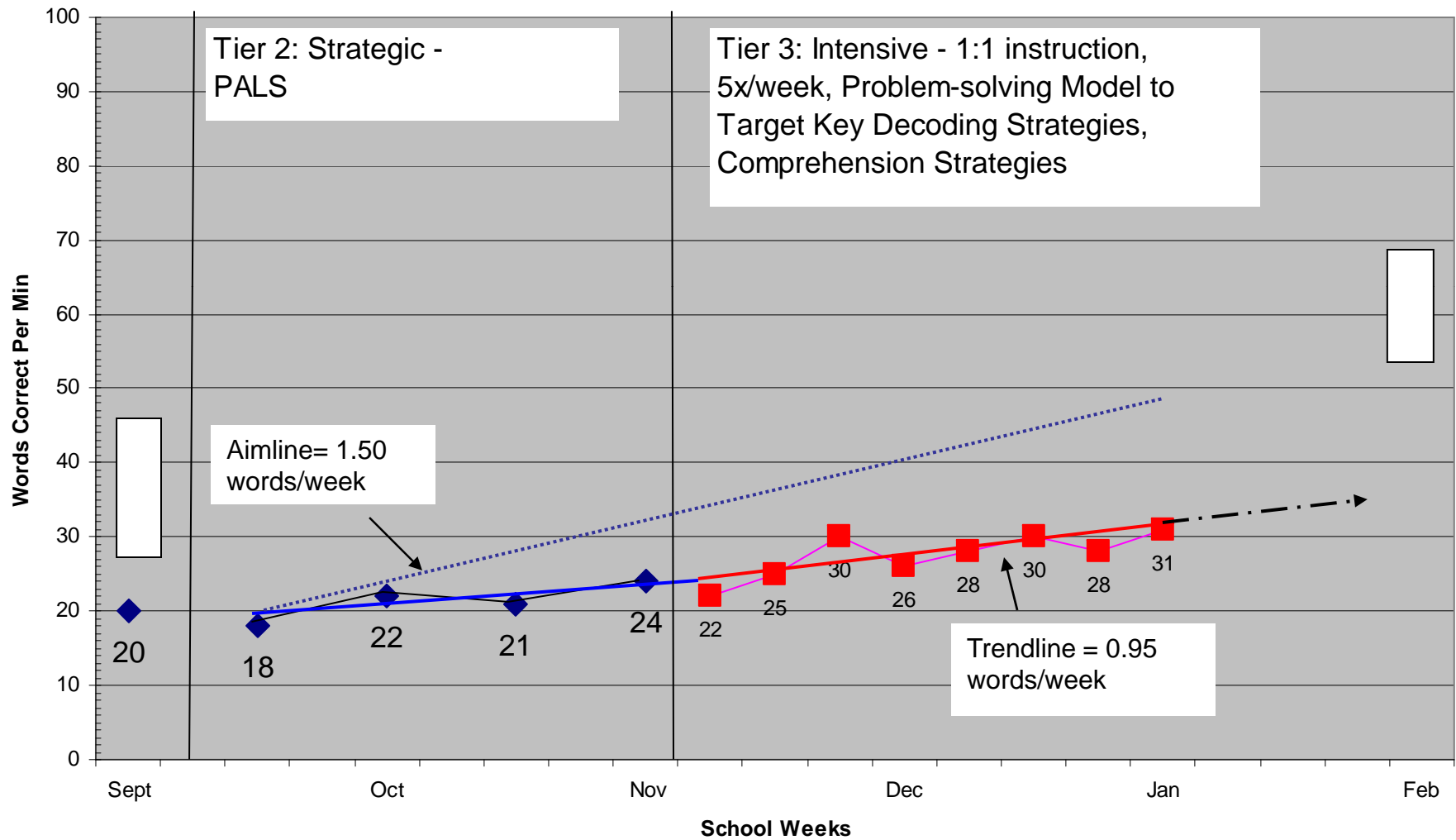


Bart

- Second grade student
- Beginning of school year
- Regular Education
- Scores at 20 wcpm in second grade material
- Teacher judges (based on in-class observation/evaluation) comprehension to not be substantially different from ORF

Shapiro (2005)

Bart

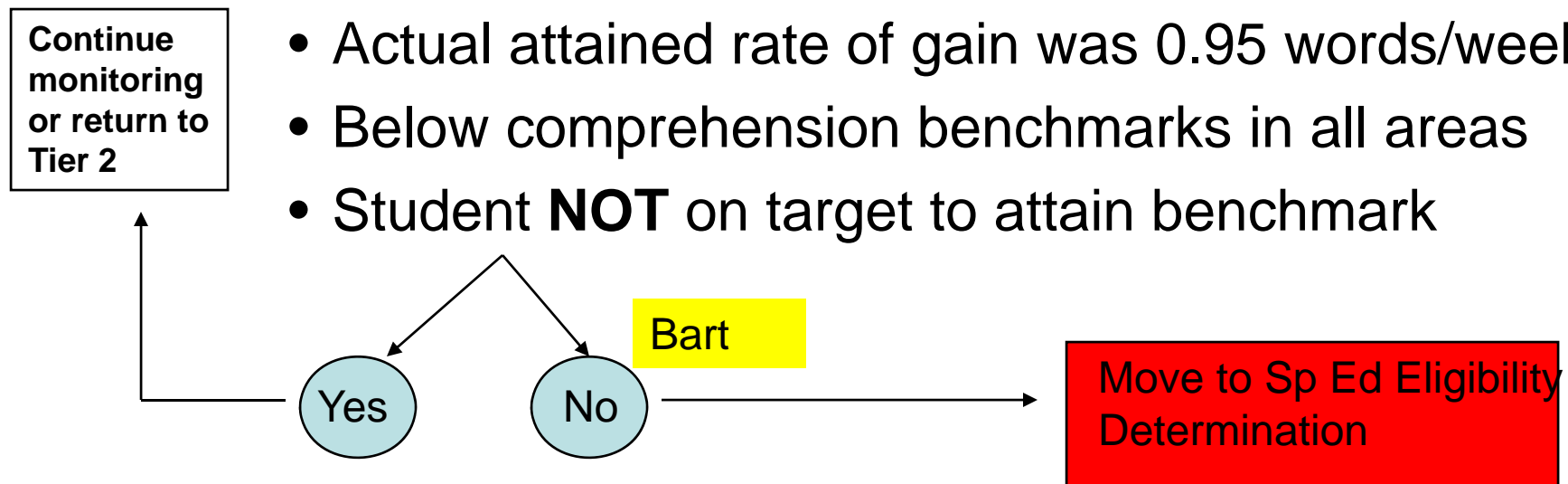


Shapiro (2005)

Decision Model at Tier 3- Intensive Intervention & Instruction

– Step 3: Is student responsive to intervention at Tier 3?

- ORF = 31 wcpm, winter benchmark (still 4 weeks away) for some risk = 52 wcpm
- Target rate of gain over Tier 2 assessment is 1.5 words/week
- Actual attained rate of gain was 0.95 words/week
- Below comprehension benchmarks in all areas
- Student **NOT** on target to attain benchmark



Shapiro (2005)



Challenges for All Schools

- (1)** Have each school identify all academic and behavioral intervention techniques and slot them into a particular tier.
- (2)** Establish some research-based guideline for attempting a particular intervention (*i.e. Orton-Gillingham, Great Leaps, Reading Recovery, Earobics, Neurological Impress, DISTAR, etc..*)
- (3)** Specify guidelines for the amount of time necessary to respond to a given intervention within a specific tier.
- (4)** Abandon the “*discrepancy model*” for all special education exceptionalities.
- (5)** Determine the necessity for special educators to implement nationally norm referenced tests.
- (6)** Decide what information is relevant from school psychological reports.

BE COURAGEOUS...



Do one brave thing today... then run like hell!