

Advances in Large Scale Oral Reading Fluency Assessment

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Oral Reading Fluency

- National Reading Panel (2000):
 - “The ability to read a text quickly, accurately, and with proper expression”.
 - “A critical component of skilled reading.”
- “Thermometer analogy”
 - **Oral Reading Fluency** scores can be used by educators and clinicians as a dependable indicator of a student’s academic “health” or “illness” (Hasbrouck & Tindal, 2006).

Current Approach

Scoring

Mark reading errors

Reading Rate
(WCPM)

DIBELS, AIMSweb,
etc.

Pedro had just moved from Mexico when
1 2 3 4 5 6 7

he saw an accident. A little boy had
8 9 10 11 12 13 14 15

fallen into an open manhole, and now his
16 17 18 19 20 21 22 23

leg was caught between two pipes.
24 25 26 27 28 29 *that*

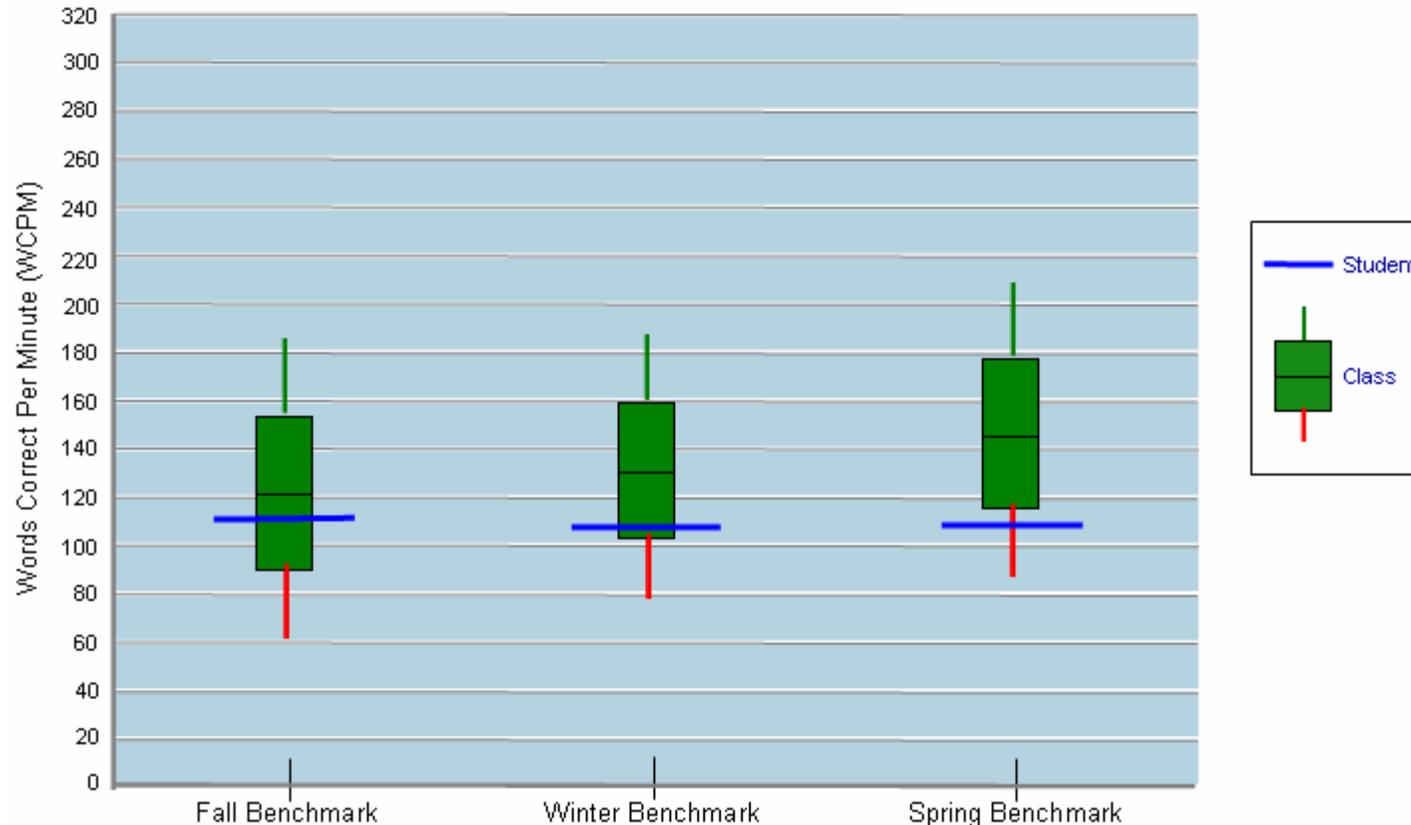
Pedro was just ten. He didn't think he
30 31 32 34 35 36 37 38

could rescue the boy alone.
39 40 41 42 43

Tracking ORF

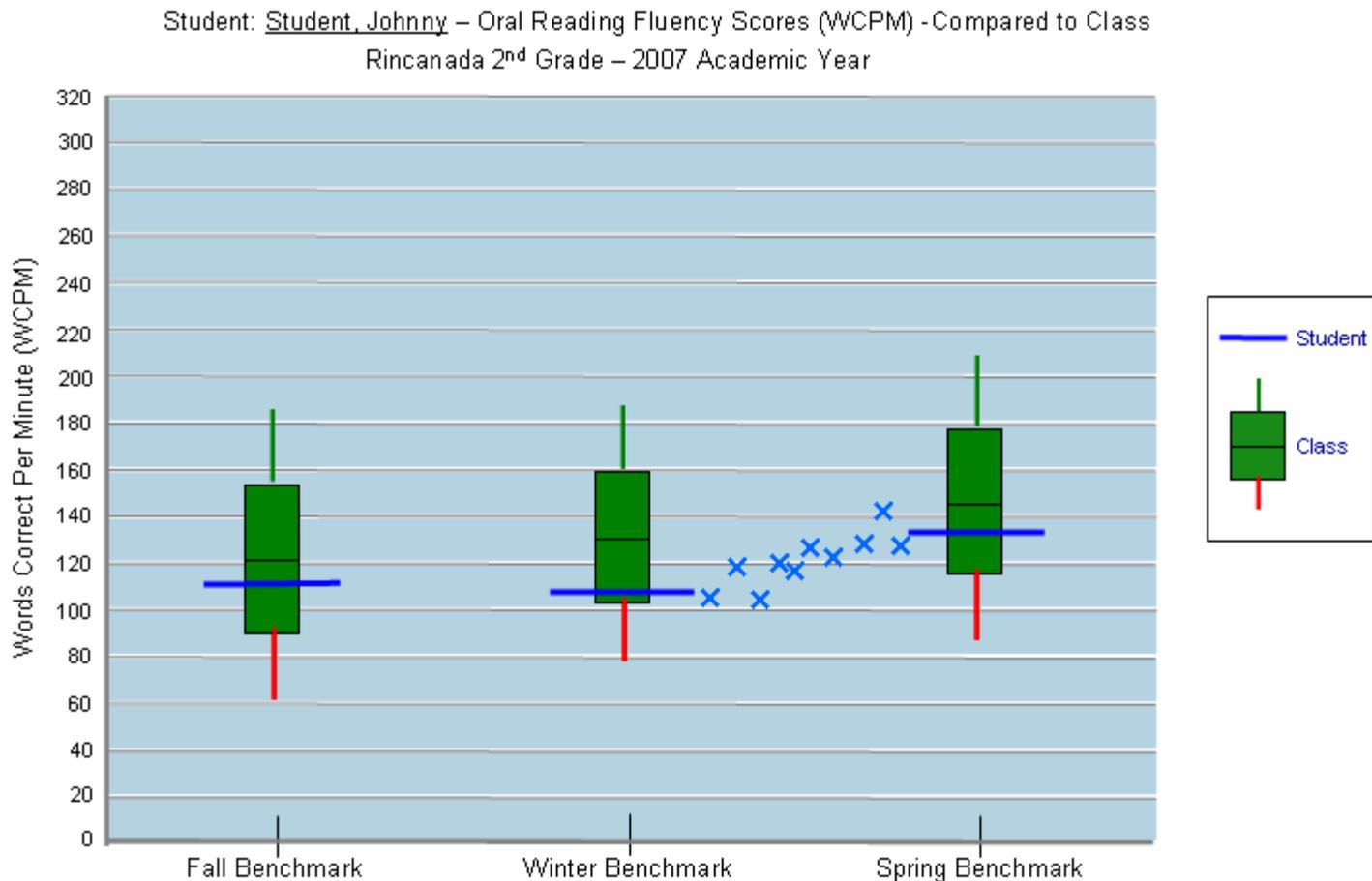
- Benchmark tests for all students to identify struggling or at-risk students

Student: Student, Johnny – Oral Reading Fluency Scores (WCPM) - Compared to Class
Rincanada 2nd Grade – 2007 Academic Year



Tracking ORF

- Progress Monitoring tests for tracking students who require special instruction/attention



Challenges

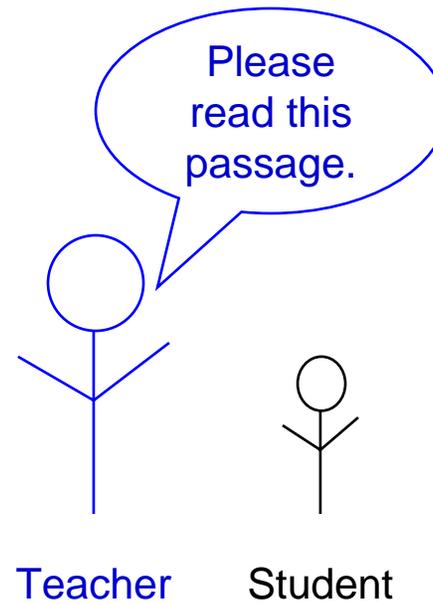
- **Important**

- Recognized by the National Reading Panel (2000) as one of five critical components of skilled reading
- Reporting required by NCLB (2001) for demonstrating “adequate yearly progress”

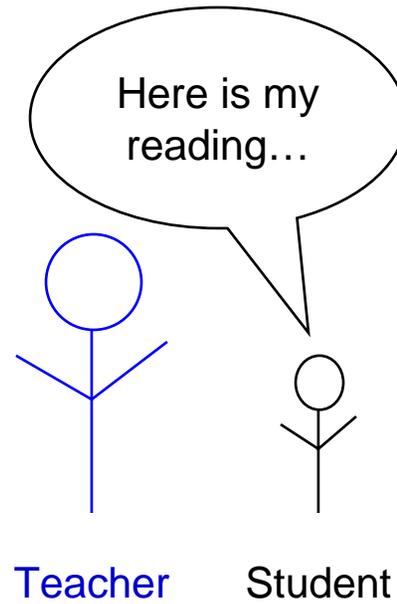
- **Time Consuming**

- Individually administered
- Teachers need training to score accurately
- Teachers spend time scoring, annotating, and entering data

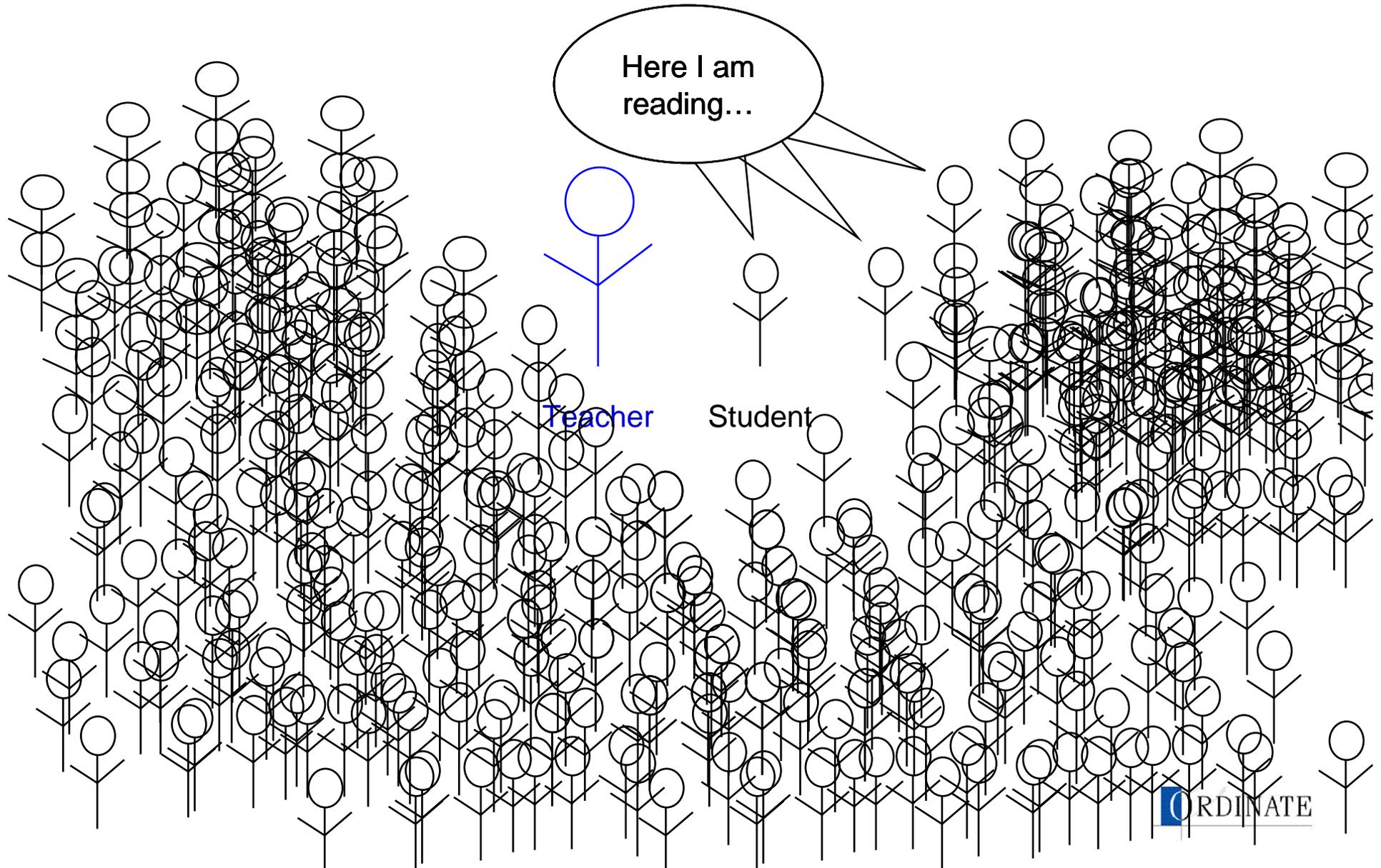
Oral Reading Assessment



Oral Reading Assessment



Oral Reading Assessment



Goals of the Study

Freeing up teachers' time with:

- Automatic administration and scoring
 - Telephone with booklet
 - Reading Rate: words correct per minute (WCPM)
- Accurate scoring
 - How well can machine scores predict human scores?
- Data management and reporting program

The web application

Web delivery

Classes Students Tests

 San Jose Summer Program
Bill's Class

Callback Number

This number will be called by the Ordinate System to deliver a test.
Click "Test" to verify the phone number by initiating a callback.

Student	Test	Call	Score	Responses
Jane Smith	4th Grade - Week 2 			
Bob Jones	4th Grade - Week 3 	 		
James Dean	4th Grade - Week 4 			

Web delivery

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Student	Test	Call	Score	Responses
Jane Smith	4th Grade - Week 2 			
Bob Jones	4th Grade - Week 3 	 dialing...		
James Dean	4th Grade - Week 4 			

Web delivery

Classes Students Tests

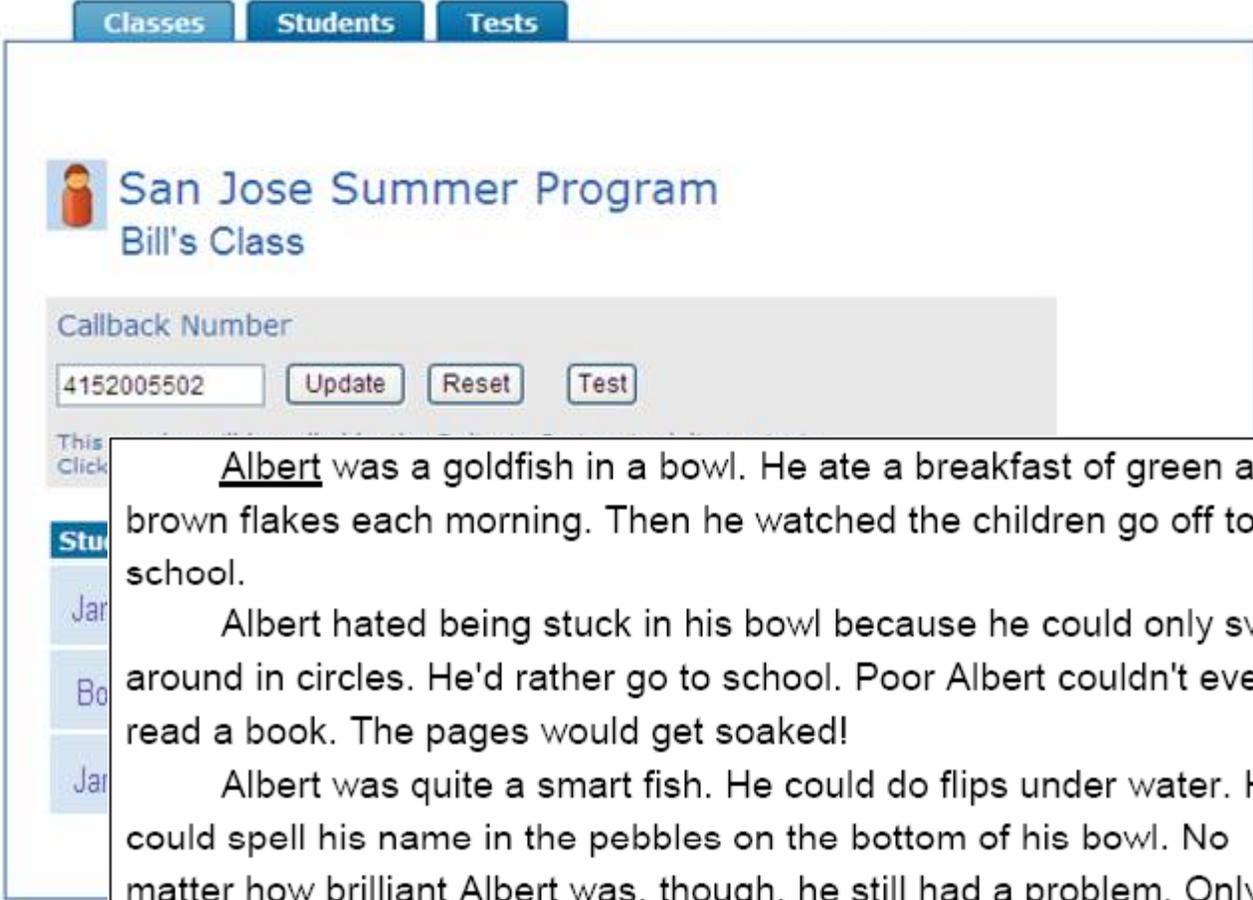
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Callback Number

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Student	Test	Call	Score	Responses
Jane Smith	4th Grade - Week 2 			
Bob Jones	4th Grade - Week 3 	 dialing...		
James Dean	4th Grade - Week 4 			

Web delivery



Classes Students Tests

 San Jose Summer Program
Bill's Class

Callback Number

4152005502 Update Reset Test

This Click

Stu

Jar

Bo

Jar

Albert was a goldfish in a bowl. He ate a breakfast of green and brown flakes each morning. Then he watched the children go off to school.

Albert hated being stuck in his bowl because he could only swim around in circles. He'd rather go to school. Poor Albert couldn't even read a book. The pages would get soaked!

Albert was quite a smart fish. He could do flips under water. He could spell his name in the pebbles on the bottom of his bowl. No matter how brilliant Albert was, though, he still had a problem. Only the cat spoke to him. And the cat was not particularly nice to him.

Web delivery

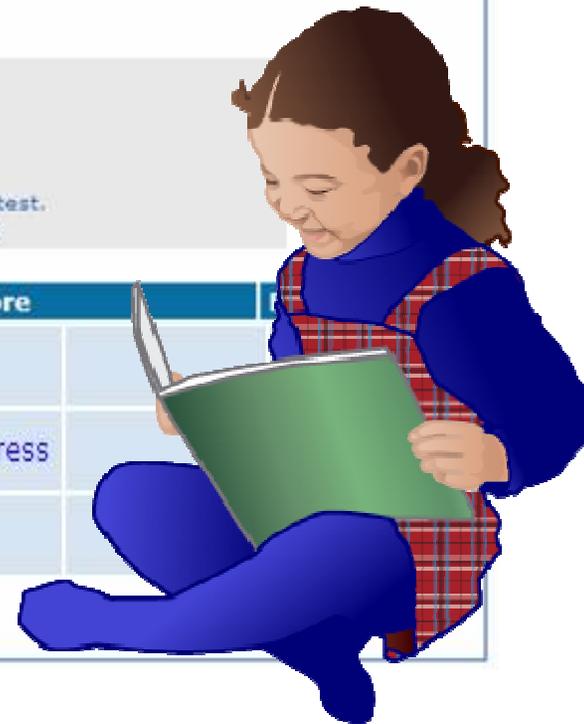
Classes Students Tests

 San Jose Summer Program
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Callback Number

This number will be called by the Ordinate System to deliver a test.
Click "Test" to verify the phone number by initiating a callback.

Student	Test	Call	Score
Jane Smith	4th Grade - Week 2 		
Bob Jones	4th Grade - Week 3 	 call in progress	
James Dean	4th Grade - Week 4 		



Web delivery

Classes Students Tests

 San Jose Summer Program
Bill's Class

Callback Number

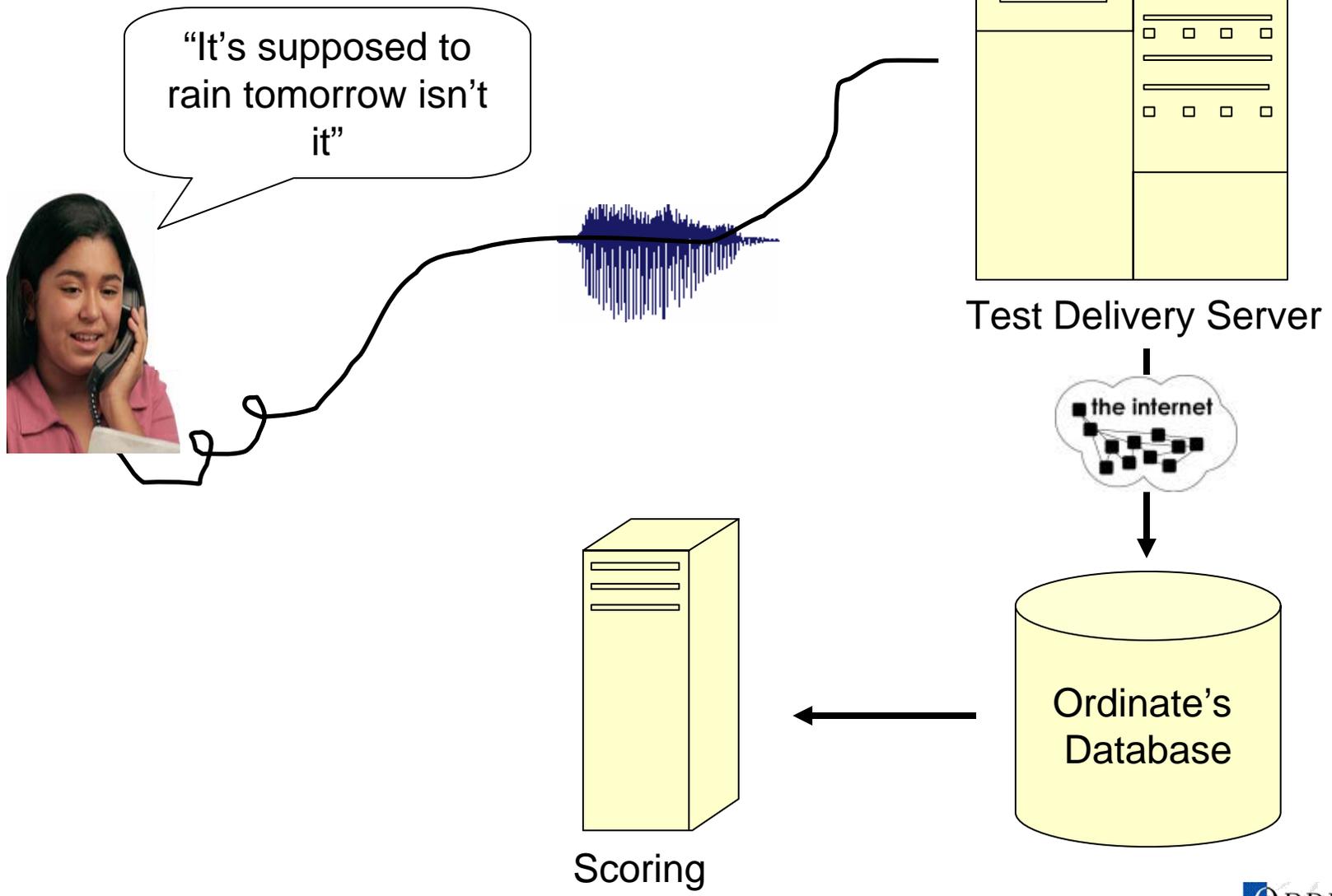
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Click "Test" to verify the phone number by initiating a callback.

Student	Test	Call	Score	Responses
Jane Smith	4th Grade - Week 2 			
Bob Jones	4th Grade - Week 3 	completed	Accuracy 81% WCPM 85 Expressiveness 3	1  re-test
James Dean	4th Grade - Week 4 			

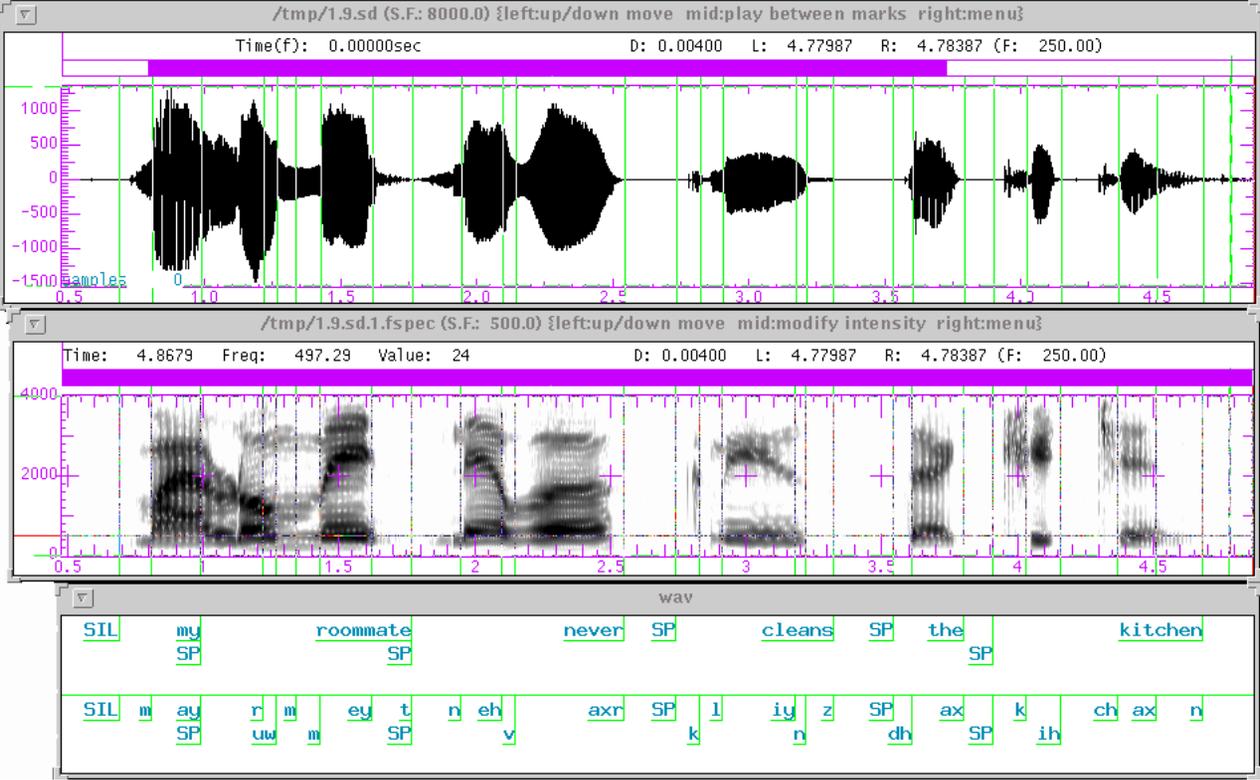
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Alignment

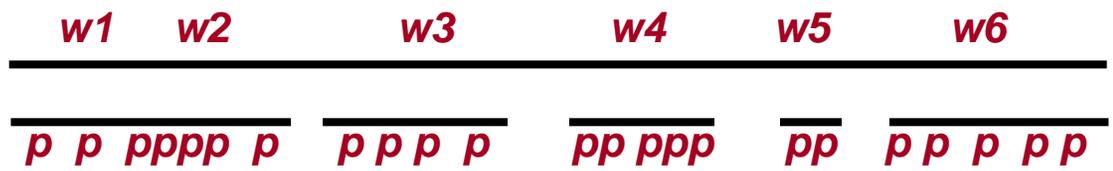


waveform

spectrum

words

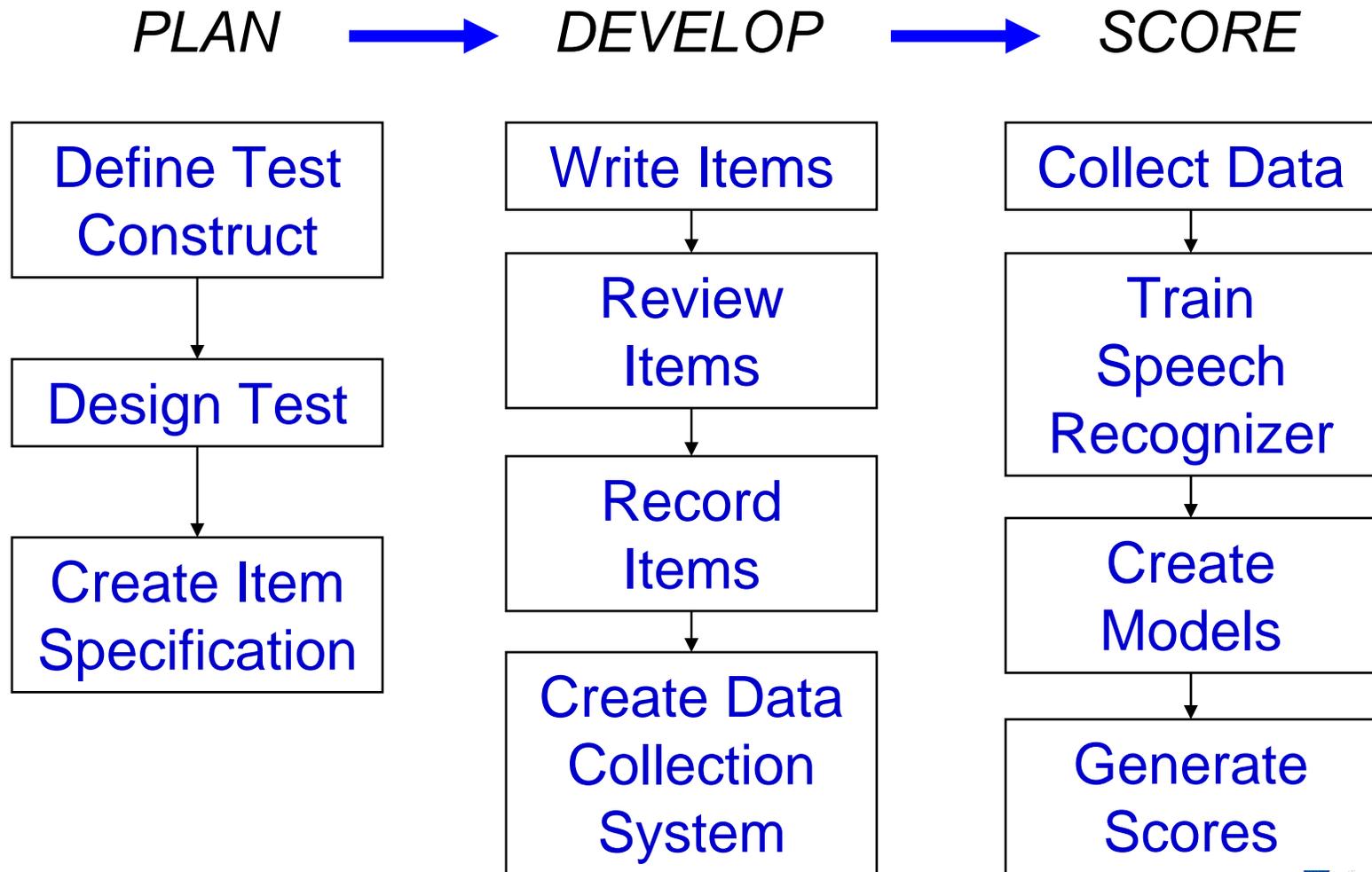
segmentation



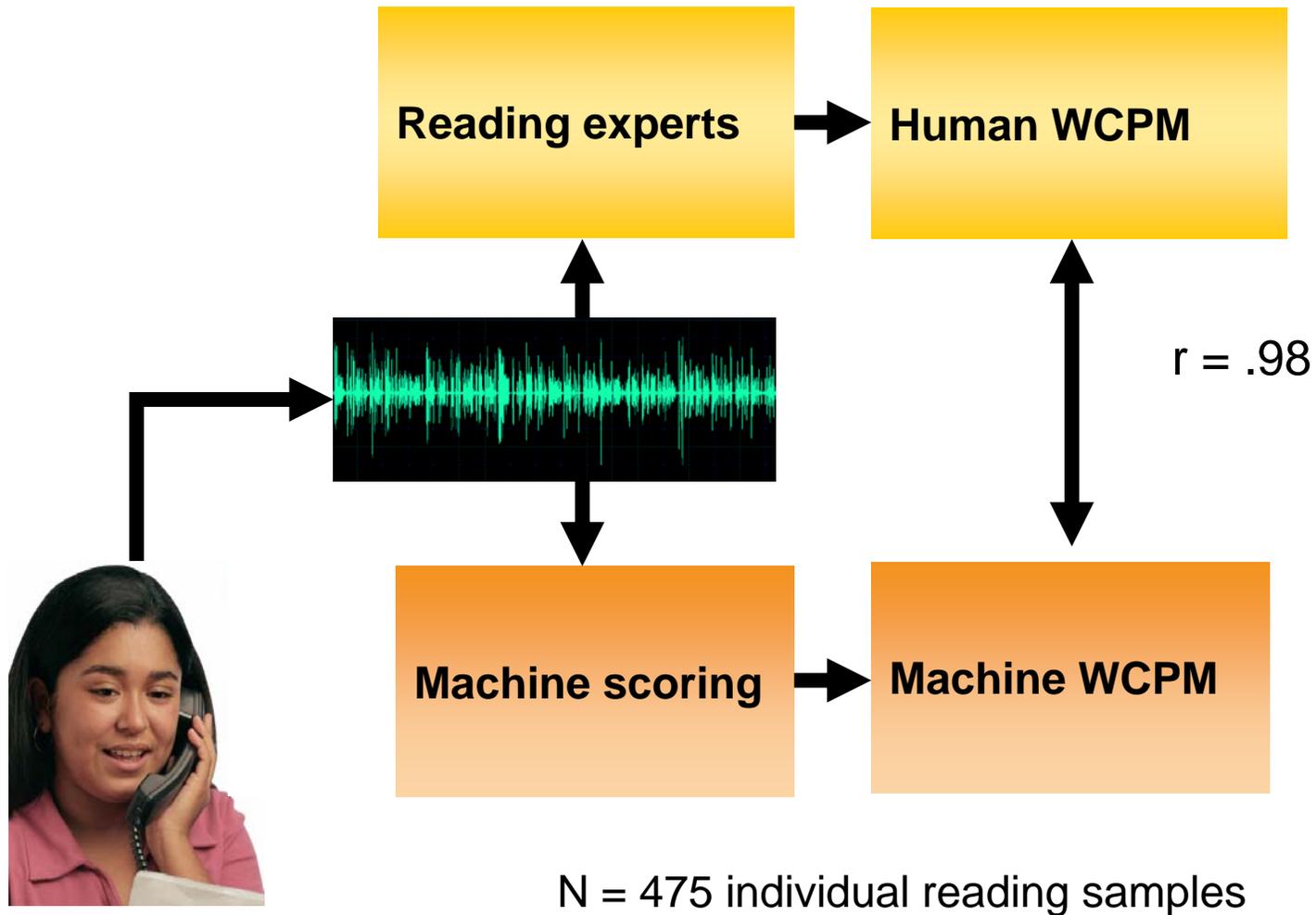
75-90 Words/Min

5.8 Phones/Sec

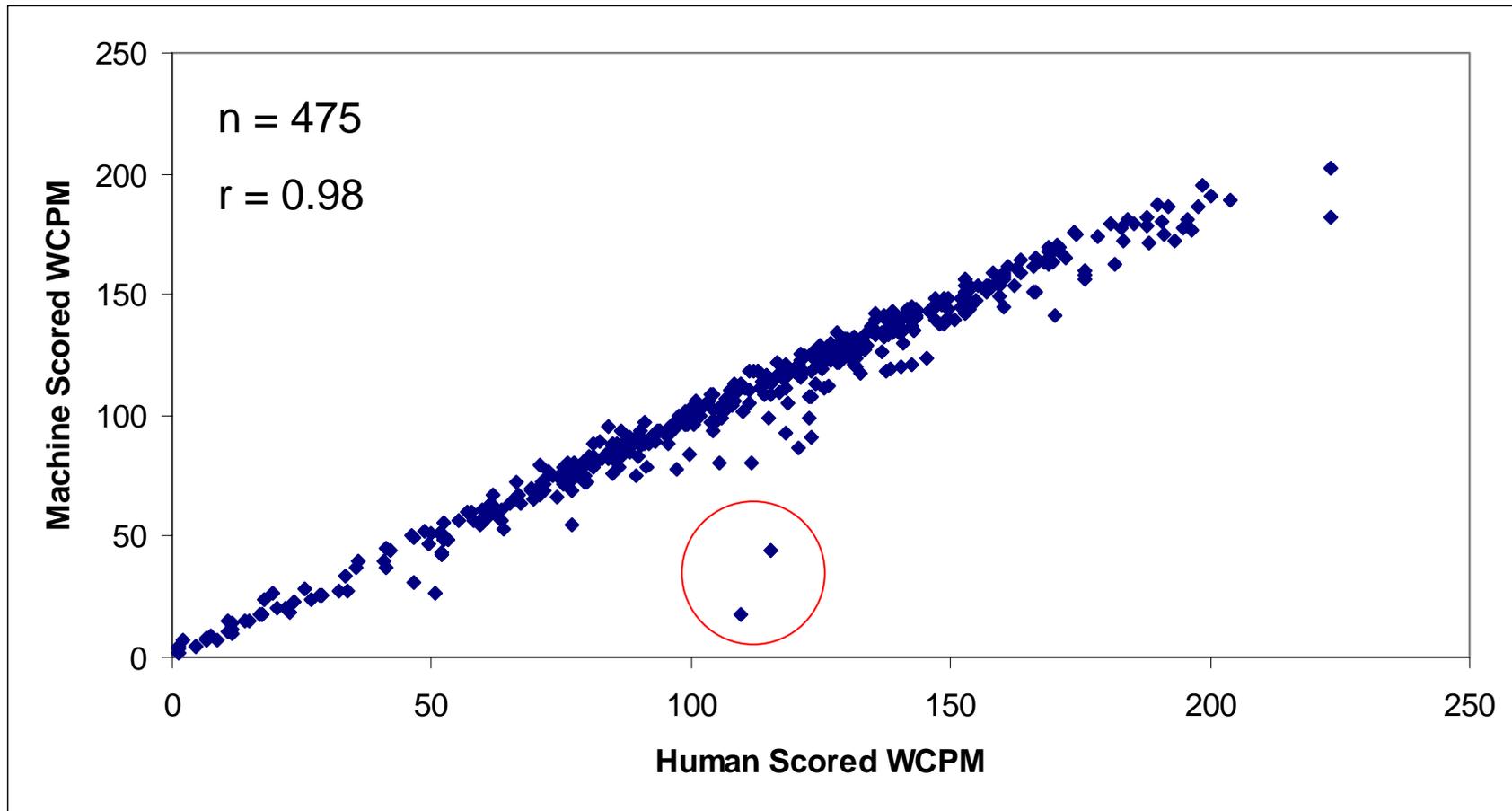
Development



Validation



Correlation of WCPM



Grades 1, 3, and 5 together

Conclusions

Automating administration and scoring of oral reading fluency performance using ASR:

- **Reduces time spent scoring and administering (e.g., teachers can use proctors or aides)**
- **Produces scores as reliable as trained human raters (0.98)**
- **Preserves digitized readings for replaying later from web page testing record**

Conclusions

Future directions

- Broader profile of reading ability:
 - Percent Accuracy
 - Expressiveness (phrasing, pausing, prosody)
 - Diagnostic measures
- Homework assignments/learning modules

Thank You

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