

PROVINCIAL ASSESSMENTS IN READING: PSYCHOMETRIC PROPERTIES AND INTERPRETATION OF SCORES

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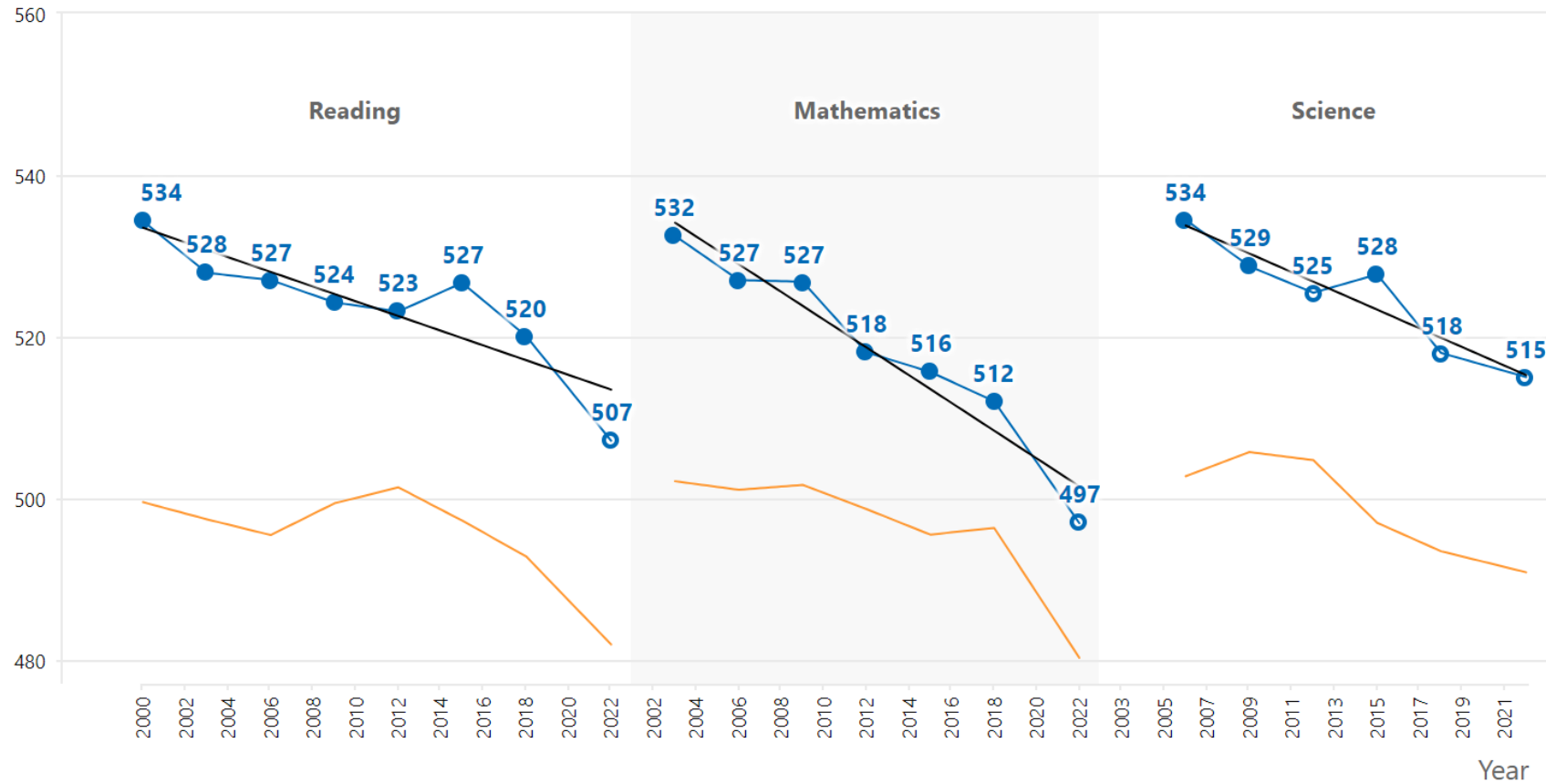
WHAT A SCREENER IS? AND WHAT A SCREENER IS NOT?

Figure 1. Trends in performance in mathematics, reading and science

Canada

Score points

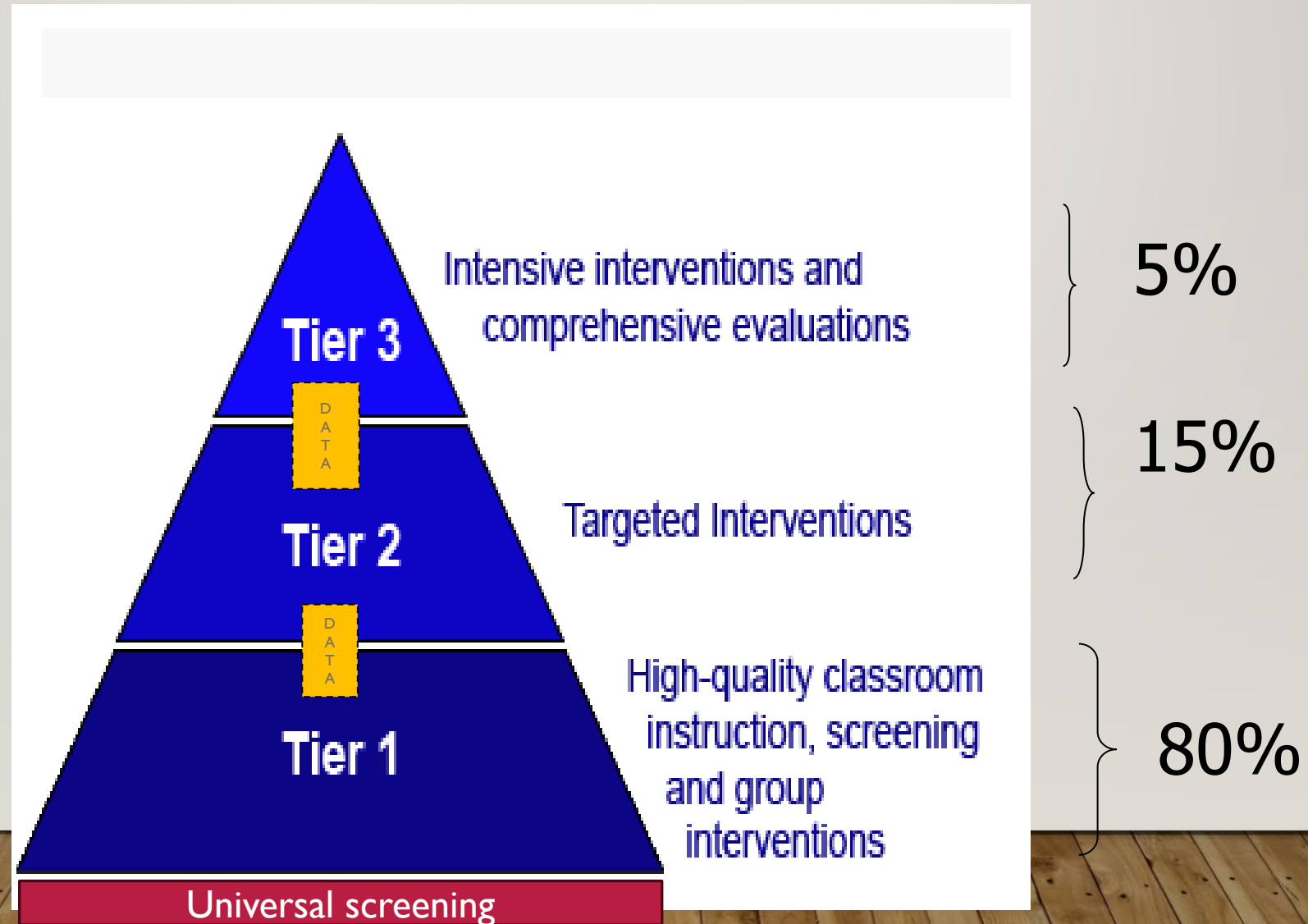
● Mean performance — Best-fitting trend — OECD Average (23 countries)



The 2022 PISA results show Alberta's functionally illiterate group almost doubling to 14.7 per cent.

Alberta student results on International PISA test for reading 2000-2022								
PISA results in reading	Overall score	Level 6 (highest level of understanding) (percentage of AB students)	Level 5 (percentage of AB students)	Level 4 (percentage of AB students)	Level 3 (percentage of AB students)	Level 2 (percentage of AB students)	Level 1 (low level of understanding: functionally illiterate) (percentage of AB students)	Below Level 1 (lowest level of understanding; functionally illiterate) (percentage of AB students)
2000	550	22.5 (combined)		28.2	26.7	14.7	6.1	1.8
2003	543							
2006	530							
2009	533	3.5	12.6	27.3	27.5	19	8.1	2
2012	525							
2015	533							
2018	532	4	14.3	25.6	26.2	17.9	8.6	3.4
2022	525	5.3	13.6	22.5	24.6	19.2	9.6	5.1

THE RESPONSE TO INTERVENTION (RTI) MODEL



WHAT HAPPENS IN OUR SCHOOLS TODAY?

32% of our students are reading below grade level

Teachers have limited knowledge of the foundational skills of literacy acquisition and how to teach them.



WHAT DO WE REALLY WANT?

If we are ok with the 32% keep doing what you have been doing.

If we are not ok (and we shouldn't), then what should we do?
What do researchers recommend?

Researchers have long given their recommendation:

SCREEN and **INTERVENE** as early as possible



RIGOROUS READING ASSESSMENT...

- a) Is valid, reliable, and grounded in scientifically-based reading research
- b) Identifies students who may be at risk for reading failure or who are having difficulty learning to read. **PREVENTION IS THE BEST INTERVENTION**
- c) Measures progress in skill areas (i.e., word recognition/decoding, vocabulary development, reading fluency, and reading comprehension)

THREE KINDS OF READING ASSESSMENTS

- A comprehensive reading program includes reading assessments to accomplish three purposes:
 - **Screening** – Assessments that are administered to determine which children are at risk for reading difficulty and who will need additional intervention
 - **Diagnostic** – Assessments that help teachers plan instruction by providing in-depth information about students' skills and instructional needs
 - **Progress Monitoring** – Assessments that determine if students are making adequate progress or need more intervention to achieve grade level of reading outcomes

SCREENING ASSESSMENT

- The crucial issue for screening assessment is predictive validity – which children are likely to experience reading difficulties or currently experience reading difficulties?
- The primary purpose of screening assessment is to identify children early who need additional instructional intervention.
- *Identification is not enough!* Screening is only valuable when followed with additional instructional intervention so that students achieve grade level reading outcomes.

THE PROVINCIAL ASSESSMENTS



WHAT ASSESSMENTS WERE IN PLACE?

- More than 50% of the school divisions in AB were using Fountas & Pinnell.

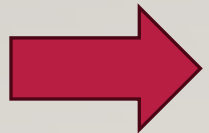
Barrett et al. (2024) -- Same conclusion as in Barnes et al. (2016)

Table 3. Classification Accuracy for Four Approaches to Screening Using Cut-scores Optimized for the Current Sample.

Parameter	Acadience fluency		Star Reading		Benchmark assessment system		Multivariate approach
	Publisher (composite)	CART-derived (ORF)	Publisher	CART-derived	School-chosen	CART-derived	CART-derived
Cut-score	180	81	323	345	14 (Level N)	13 (Level M)	346 (Star), 81 (ORF) ^a
Overall correct classification	70.9%	85.5%	77.3%	83.3%	58.2%	79.1%	89.1%
Sensitivity	52.3%	84.6%	63.1%	75.8%	30.8%	87.7%	90.8%
Specificity	97.8%	86.7%	97.8%	95.6%	97.8%	66.7%	86.7%
Negative posttest probability	41.2%	20.4%	35.1%	26.7%	50.4%	21.0%	13.2%

THE ONTARIO HUMAN RIGHTS COMMISSION REPORT (2022)

- Governments should make early literacy and numeracy screening mandatory.
- Screening as soon as Kindergarten



Access to these services is a human right, not a choice.

Same recommendations made by Saskatchewan Human Rights Commission Report






THE PURPOSE OF THESE ASSESSMENTS

- To SCREEN for reading and mathematics difficulties
- To give some indication about the areas of literacy (or numeracy) that the child might be struggling with (decoding, fluency, comprehension)

Literacy assessment video series

The following literacy assessment videos feature Dr. George Georgiou and Dr. Rauno Parrila.

- [Video 1 - Why assessments are needed](#) 
- [Video 2 - What makes an assessment effective?](#) 
- [Video 3 - How to make use of assessment results](#) 

LENS (PARRILA & KOHNEN, 2022)

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n

k

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a

c

p

m

f

o

SHOULD **NOT** BE THE
ONLY MEASURE USED TO IDENTIFY
CHILDREN WITH READING DIFFICULTIES.

This task was shared with teachers to help
them identify what sounds their students
know or not.

CASTLES & COLTHEART – 3 (MEASURING DECODING)

bed

long

mist

free

take

good

wolf

work

eye

give

norf

gop

hest

roft

blick

need

shoe

friend

con

peng

peef

spatch

drick

crat

WORD CHAINS (MEASURING FLUENCY)

goman

hatsun

toydogcar

fatrunball

dollbirdhopseehe

boypenonlookname

closeflyatwatchice

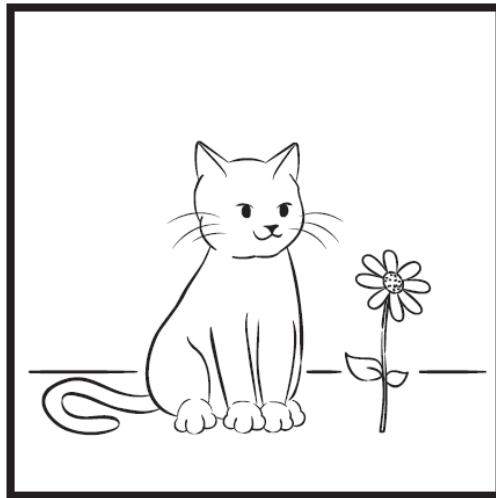
writegivefastliveback

tenwalkeathurtwhichitfar

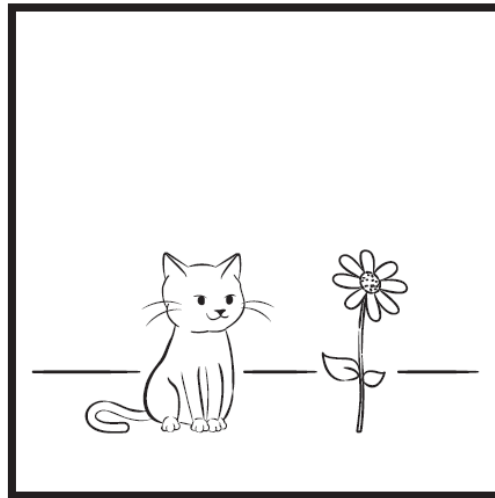
loseonlymuchkiduslighteight

SENTENCE-PICTURE MATCHING (MEASURING COMPREHENSION)

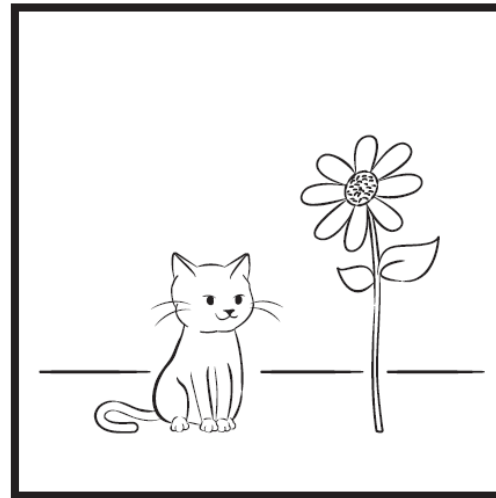
The flower is shorter than the cat.



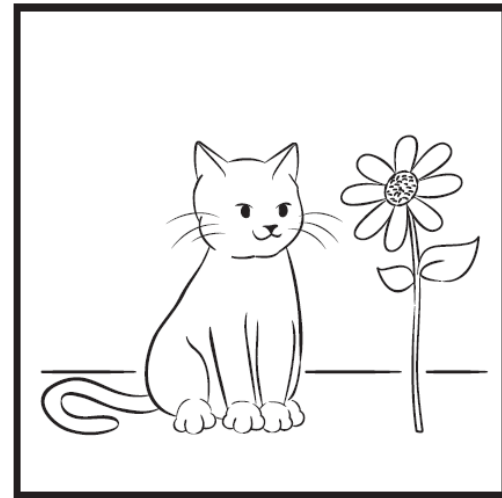
1



2



3



4

IDENTIFYING AT-RISK READERS REQUIRES NORMS

- Ideally, locally developed norms (ideally, updated every few years)

LITERACY STANDARDIZATION PROJECT: ENGLISH SCHOOLS

YEAR 1 2022-2023	Term 1: September	Term 2: January	Term 3: May
Grade 1	321 students	323 students	324 students
Grade 2	327 students	325 students	305 students
Grade 3	373 students	343 students	357 students

*Year 1: 19 schools

YEAR 2 2023-2024	Term 1: September	Term 2: January	Term 3: May
Grade 1	290 students	374 students	305 students
Grade 2	302 students	290 students	304 students
Grade 3	322 students	310 students	318 students

*Year 2: 12 schools

LITERACY STANDARDIZATION PROJECT: FRENCH IMMERSION SCHOOLS

***Year 1: 8 schools**

YEAR 1 2022-2023	Term 1: September	Term 2: January	Term 3: May
Grade 1	208 students	210 students	211 students
Grade 2	187 students	191 students	192 students
Grade 3	196 students	204 students	205 students

YEAR 2 2023-2024	Term 1: September	Term 2: January	Term 3: May
Grade 1	140 students	145 students	131 students
Grade 2	137 students	200 students	199 students
Grade 3	127 students	174 students	178 students

***Year 2: 6 schools**

LITERACY STANDARDIZATION PROJECT: FRANCOPHONE SCHOOLS

YEAR I 2022-2023	Term 1: September	Term 2: January	Term 3: May
Grade 1	89 students	103 students	103 students
Grade 2	116 students	132 students	132 students,
Grade 3	159 students	172 students	173 students

***Year 1: 6 schools**



NORMATIVE TABLES

Grade 2 English CC3 Regular Words

Raw Score	Percentile	Standard Score
≤1	≤4	73
2	6	77
3	9	80
4	11	82
5	14	84
6	16	85
7	19	87
8	22	88
9	24	89
10	27	91
11	29	92
12	31	93
13	34	94
14	36	95
15	39	96
16	41	97
17	44	98
18	46	99
19-20	50	100
21	54	101
22	56	102
23	58	103
24	61	104

Grade 2 English Sentence-Picture Matching

Raw Score	Percentile	Standard Score
≤1	≤7	78
2	13	83
3	20	87
4	25	90
5	30	92
6	35	94
7	38	95
8	42	97
9	50	100
10	55	102
11	61	104
12	68	107
13	73	109
14	78	111
15	82	114
16	86	117
17	90	119
18	94	123
19	97	129
≥20	≥99	134

Grade 2 English Word Chains

Raw Score	Percentile	Standard Score
≤1	≤2	69
2	4	73
3	6	76
4	7	78
5	10	81
6	13	83
7	18	86
8	22	89
9	25	90
10	28	91
11	33	94
12	37	95
13	40	96
14	43	97
15	45	98
16	48	99
17	50	100
18	55	102
19	58	103
20	61	104
21	66	106
22	70	108

RELIABILITY

- Test-retest for Word Chains and SPM with a subsample of our participants
English: 128 in Grade 1, 129 in Grade 2, and 121 in Grade 3;
Francophone: 76 in Grade 1, 81 in Grade 2, and 85 in Grade 3; and
French Immersion: 75 in Grade 1, 81 in Grade 2, and 79 in Grade 3

All test-retest reliability coefficients higher than .85 (the highest being .96)

- Cronbach's alpha for LeNS and CC-3 higher than .92



VALIDITY EVIDENCE

- We administered three established measures (TOWRE real words, TOWRE nonwords and TOSREC to a sub-sample of our participants.

	1.	2.	3.	4.	5.	6.	7.	8.
1. WRE	1							
2. PDE	0.803	1						
3. TOSREC	0.846	0.718	1					
4. LENS Sound	0.727	0.621	0.590	1				
5. CC3 Reg Words	0.806	0.769	0.749	0.671	1			
6. CC3 Irreg Words	0.908	0.755	0.842	0.708	0.832	1		
7. CC3 Non-Words	0.646	0.721	0.658	0.628	0.862	0.673	1	
8. Sentence Matching	0.876	0.734	0.877	0.698	0.777	0.881	0.668	1
9. Word Chains	0.741	0.690	0.733	0.552	0.693	0.715	0.655	0.760

GENERATED REPORT

Appendix A, Sample 1

Appendix A, Sample 2

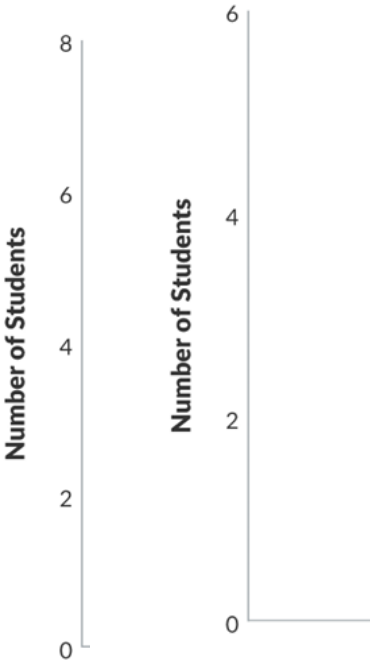
Appendix A, Sample 3

Appendix A, Sample 4: Individual Student Report

Castles and Coltheart
September 2023
6 Students Completed



Numeracy
8 Students Completed
Test de dépistage-N



Appendix A, Sample 4: Individual Student Report

Student Name

Individual Student Report - Letter Name-Sound (LeNS) Assessments English - Grade 2 - September 2023

What Is a Literacy Screening Assessment?

The provincial Literacy Screening Assessments are locally adapted to meet the needs of students in Alberta. They are used to broadly categorize students based on a set of foundational literacy skills (grapheme-phoneme correspondences and word recognition). These assessments are used as a first step to ensure students have the necessary skills to develop into independent readers.

What Is Being Assessed?

Foundational literacy is supported by understanding relationships between sounds in oral language and the letters that represent them. The Letter Name-Sound (LeNS) test is a complementary assessment that provides additional information on whether students experience difficulties in grapheme-phoneme correspondences. The LeNS assesses the following:

- Knowledge of letter names and corresponding sounds
- Knowledge of common grapheme-phoneme correspondences

Interpretation of Results

The Literacy Screening Assessment norms are based on a representative sample of grade-specific student populations across Alberta. This data makes it possible to compare individual students' performance with a grade-specific group of peers in a certain time of year. To be deemed 'at-risk' a student's score **must** be below the 25th percentile ranking of the norms on the overall score for the LeNS assessment. The vertical black line within the bar graph indicates the cut score for that reporting period.

The results should be used to help teachers identify those students who may need intensive support to develop their literacy skills. It is important to pay attention to the relative student achievement level. For example, a student who is 'not at-risk' may nevertheless demonstrate limited literacy skills if their performance on the assessment is not much above the at-risk range.

Student's Overall LeNS Performance Results: Not At-Risk



Sound Accuracy



IN AN IDEAL WORLD

Child's Reading X-Ray

	CC-3 (accuracy)	Word Chains (fluency)	SPM (comprehension)
Student 1	106	113	81
Student 2	75	86	85
Student 3	108	95	88



Reading Intervention Lessons

A Guide to Systematic
Phonics Instruction

Small Group (Tier 2)

64 PA + Phonics lessons
16 review lessons

Lesson 17: u

Letter-sound Correspondence <u>, short /ŭ/

Objective:

Students will identify and blend words that contain the letter-sound correspondence.

Materials:

Letter-sound card
Target word cards
Individual letter-sound cards
Selected text for shared book reading
Letter-sound boxes (optional)
Recording sheet (optional)

Target Words

lug
cub
pup
hug
plum

Choose two irregular words from [Fry's List \(Appendix 1\)](#) to review.

Instructions:

1. Introduce the letter-sound, the target words, and two selected irregular words (5 minutes)

Show the students the letter-sound card u.

Say: *"This is the letter u. The letter u says short /ŭ/. Say its sound with me: /ŭ.../."*

Show the students the target words.

Say: *"We can read words by sounding them out. Look at each word, listen to how I read it, then repeat after me."*

Show each target word one word at a time. Say the word aloud emphasizing the letter-sound short /ŭ/. Have the students look at each word and repeat it back to you.

Say: *"Now let's look at some new words. These words are called irregular words. They are irregular because they have only some parts that can be directly sounded out. The other parts we must look at and remember."*

Show each irregular word one word at a time. Say the word aloud. Have the students look at each word and repeat it back to you.

lug

cub

pup

hug

plum

drum

ONGOING TRAINING FOR OUR TEACHERS



THANK YOU

