

Factors Giving Educational Advantages in a Linguistically Diverse Situation

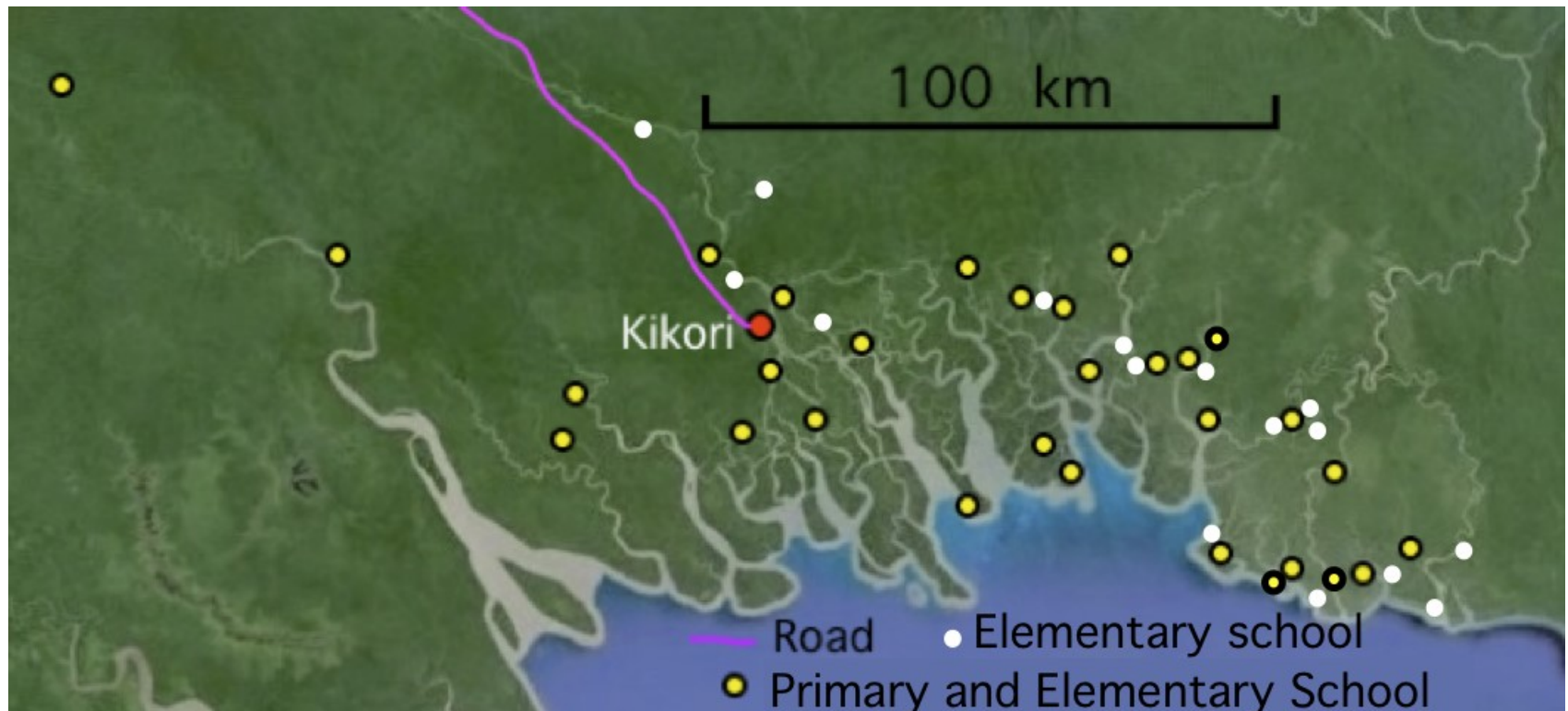
A statistical investigation

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Kikori

- Town pop: 4,000
- District pop: 51,000, 10+ languages



LITERACY SURVEYS CARRIED OUT IN SCHOOLS THROUGH WHOLE AREA 2012-2018

Kikori Elementary School, 2015

- Biggest school in district, roll: 400, attendance: 210
- Classes: Prep, G1, G2
- Interleaved classes: each child – only 5 days school per fortnight.
- Diverse linguistic backgrounds (migration)
- Teaching literacy only in English



Data gathered (for remedial classes)

- 207 children
- Sex (gender)
- Age
- Class (grade)
- Village and school origins (if migrants)
- Languages spoken at home
- Measures of vocabulary knowledge
LWC: English, Tok Pisin (TP), Hiri Motu (HM)
- Measures of literacy
LWC: English, Tok Pisin (TP), Hiri Motu (HM)
- This paper: investigates interactions between literacy measures and other data

Literacy Test

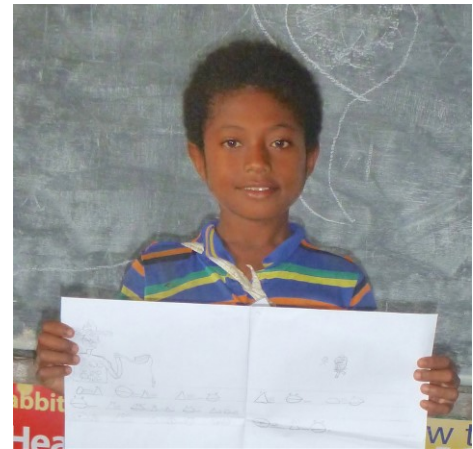
- Letters (6 points)
- Words (6 points)
- Story (6 points)
- Score out of 18
- 15 => ok reader
- In 3 LWCs
 - English (Eng)
 - Tok Pisin (TP)
 - Hiri Motu (HM)

t	k	n	i	o	v		
English							
	on		dog		leaf		Eng
house		talked		sitting			
The dog put his bones down and slept by the fire. In the night the bird came and stole them all.							
Tok Pisin							
	ia		pik		wara		TP
sikau		hatwok		pundaun			
Wanpela bikpela palai i go antap long kokonas. Taim mi go antap na katim, kulau wantaim palai i pundaun long graun.							
Motu							
	au		niu		kaia		HM
rabia		bamona		mailaia			
Tau ta ese vanagi matamata ta ia karaia, to ia kwatua namonamo lasi dainai, ranu ia goada neganai vanagi ia hure.							

Literacy test results

- n = 207 (Prep: 72, Grade 1: 67, Grade 2: 68)

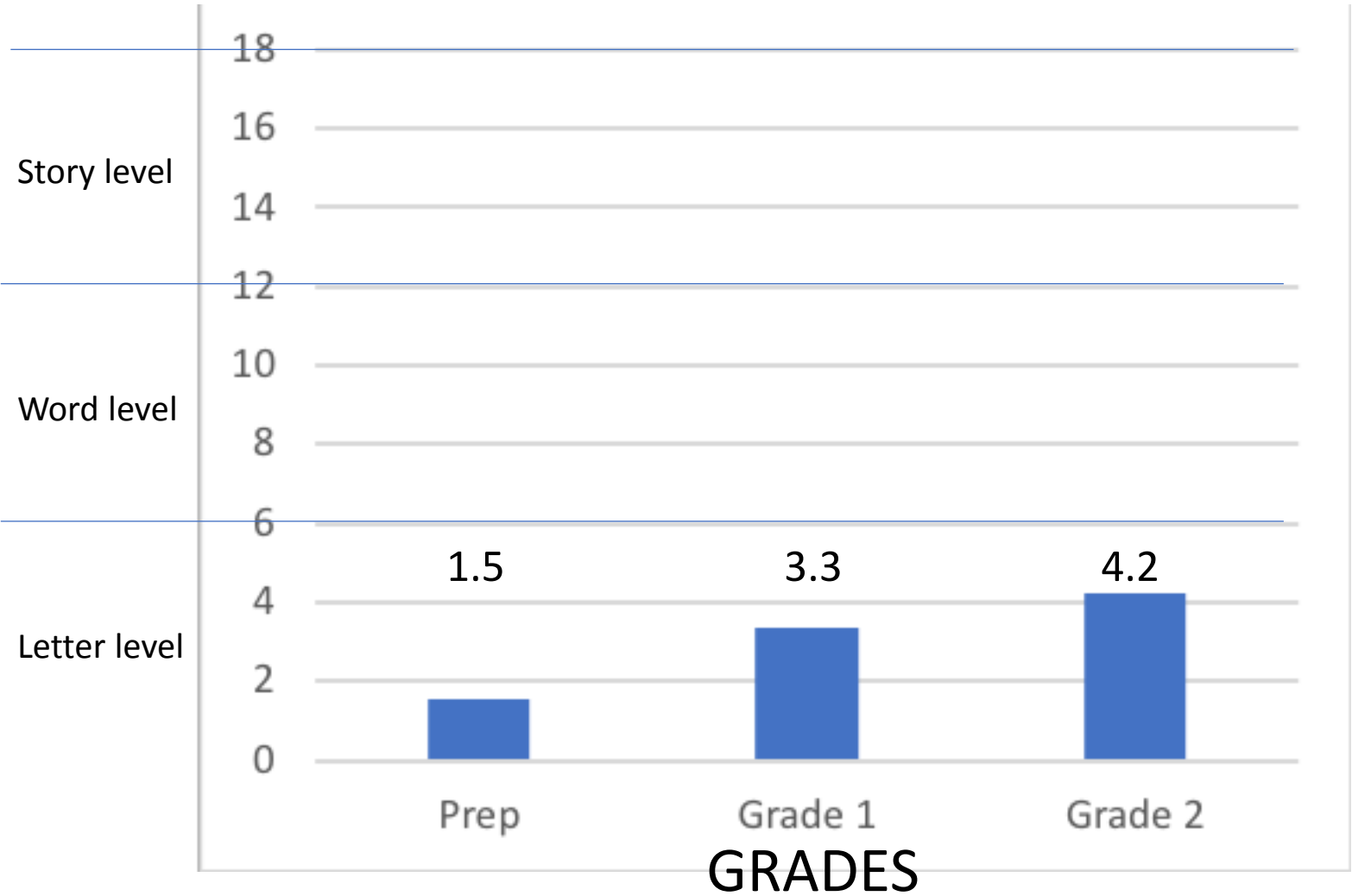
- Number who can read = 1
- English score = 15/18
- Tok Pisin score = 18/18
- Hiri Motu score = 18/18
- (also could read vernacular(s))



- Number who cannot read = 206 (99.5%)
 - English mean score = 3.0/18 (median = 2/18)
 - Tok Pisin/Motu scores = 0 (all 206 children)

Mean (average) score of each grade

LITERACY SCORE AVERAGES



Medians

0

3

4

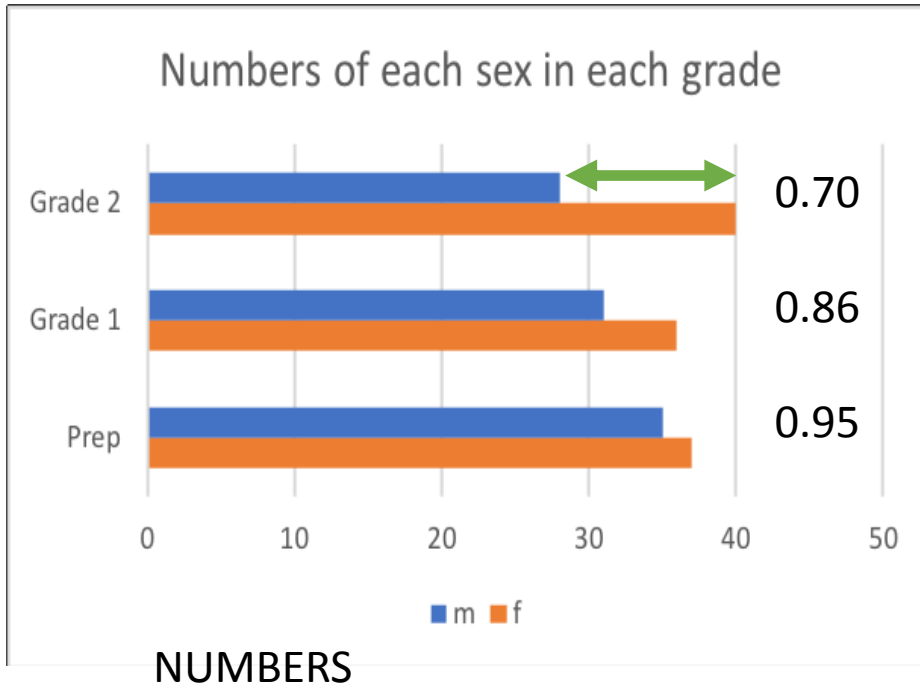
Shocking!

- **68% of Grade 2 still not learnt all the alphabet!**
- likewise (from other surveys)
G3 36% G4 14% **G5 6%**
still don't know all their letters.
- *BUT even under these adverse conditions
70% of all children scored > 0; they must be learning something! What factors help or hinder?*

Effects of various factors that we measured ...

- sex (gender)
- migration
- age
- home languages
- multilingualism
- language of instruction
- language of literacy

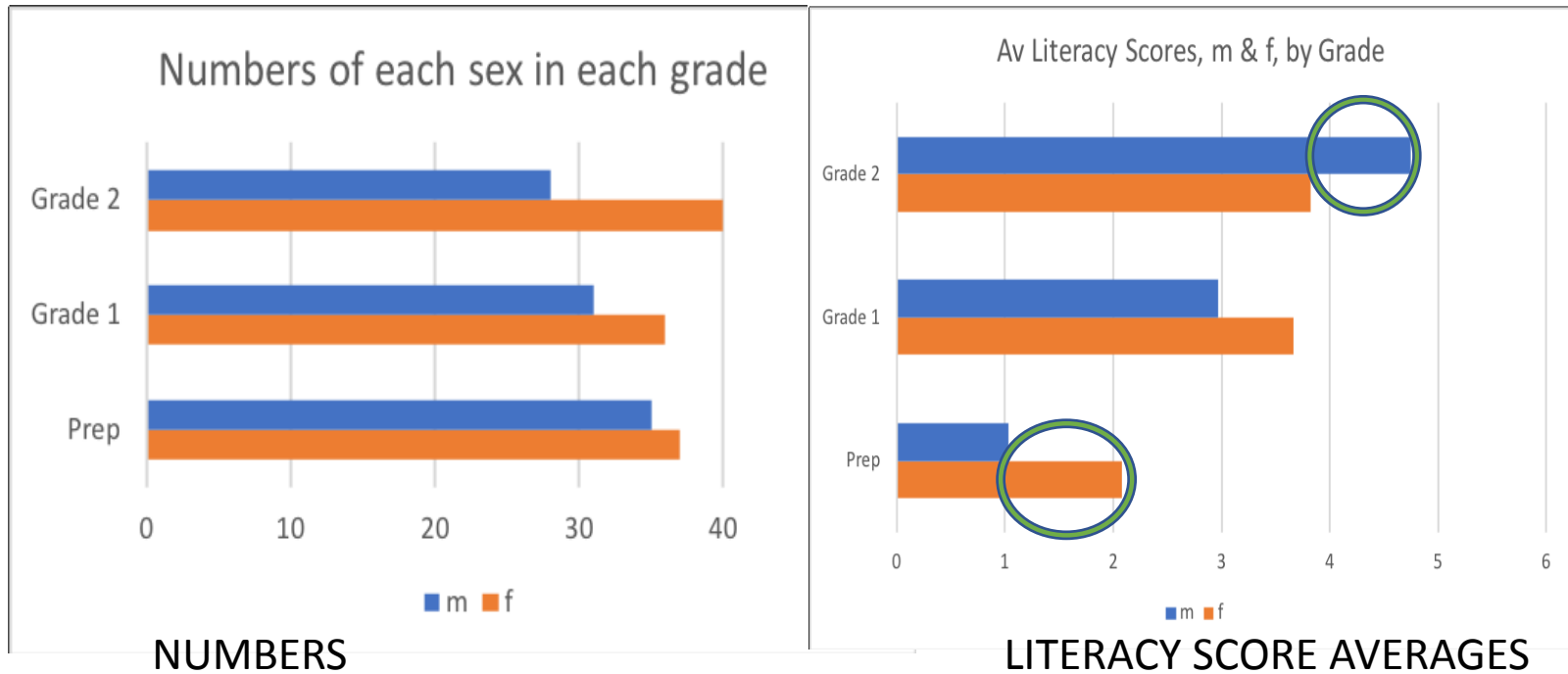
Gender and literacy – 54% are girls!



94 boys, 113 girls

GENDER GAP INCREASING IN FAVOUR OF GIRLS (ORANGE)

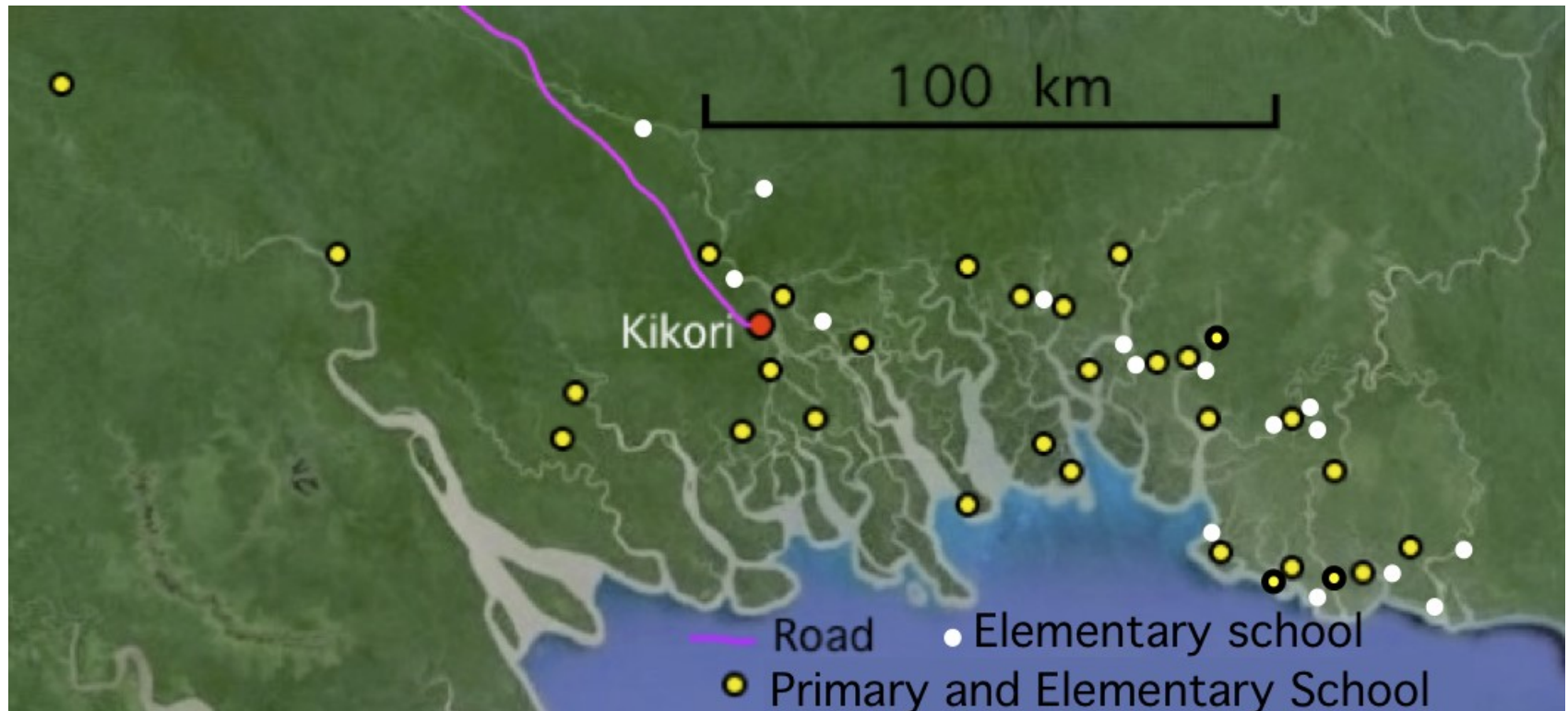
Girls do better at first



EXPLANATION:

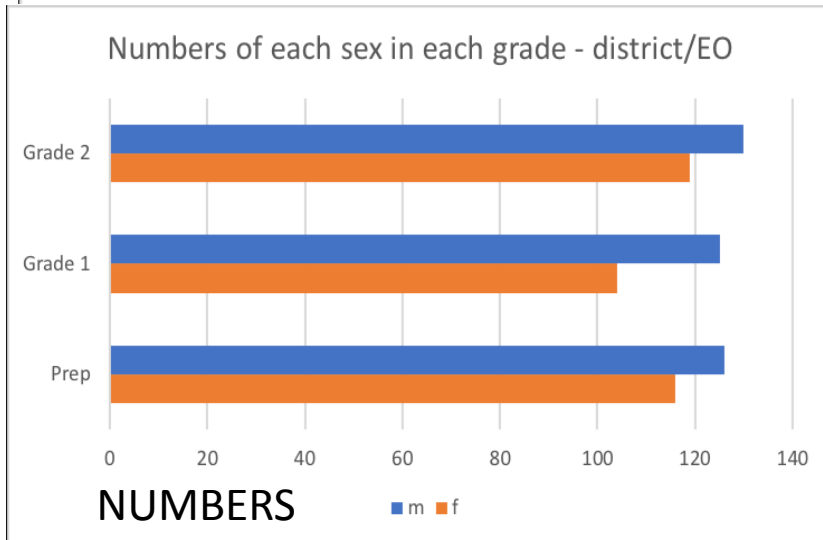
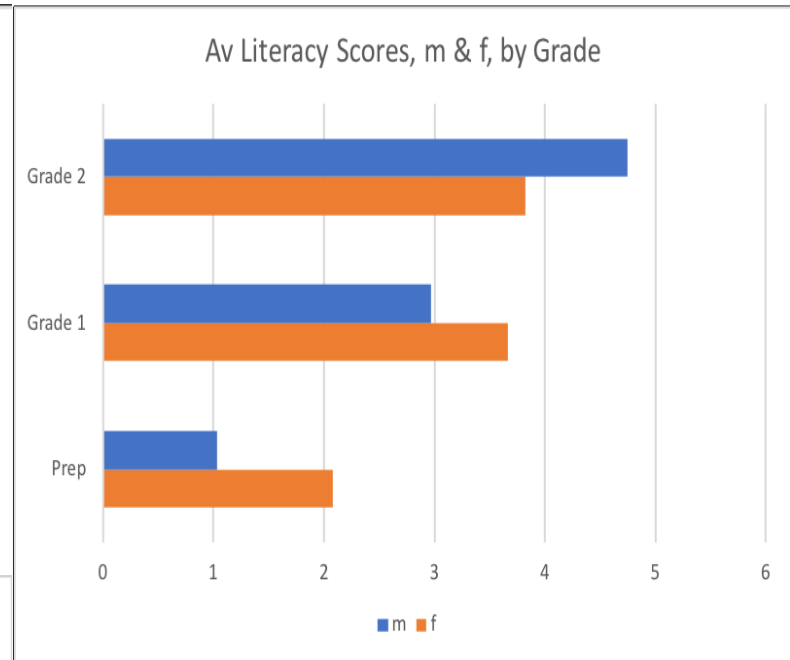
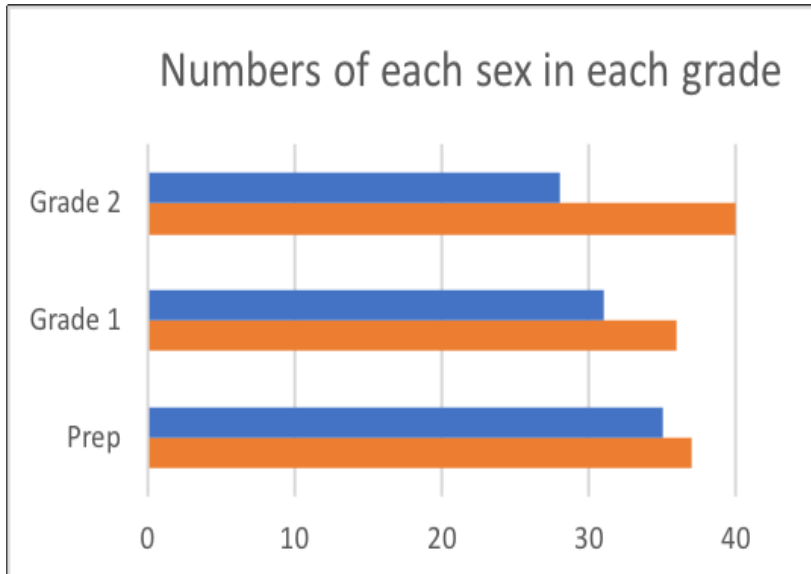
GIRLS (ORANGE) DOING BETTER AT FIRST ...
BOYS WHO DO POORLY START DROPPING OUT
- THIS PUMPS UP THE BOYS' AVERAGE BY G2

Rural School Survey Data (2012-2018)



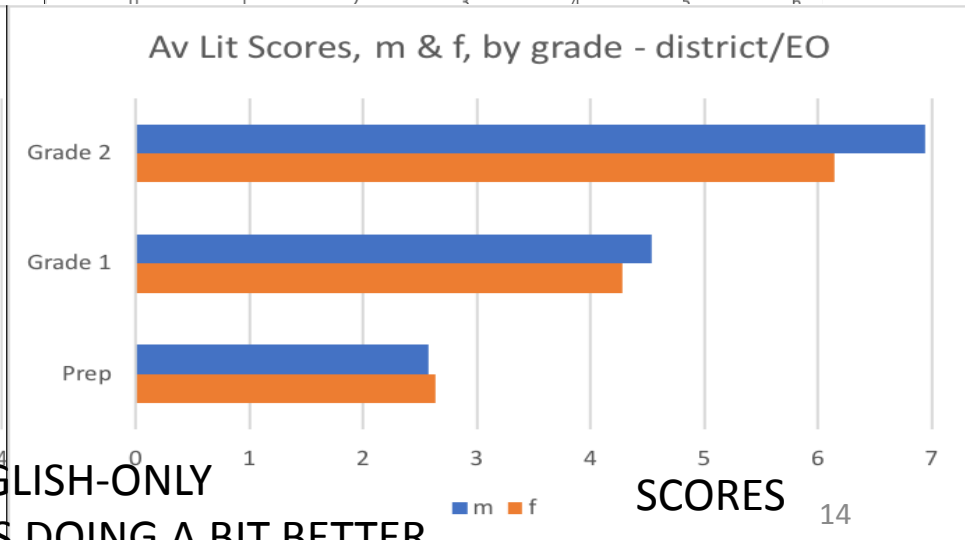
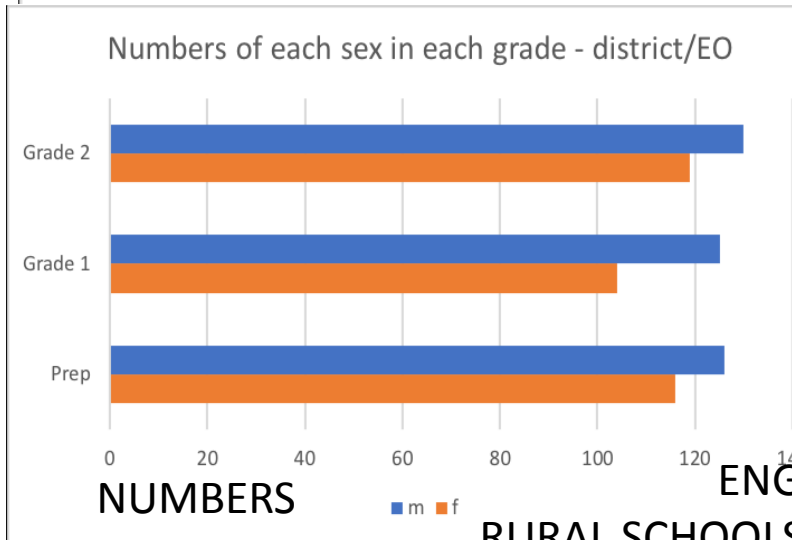
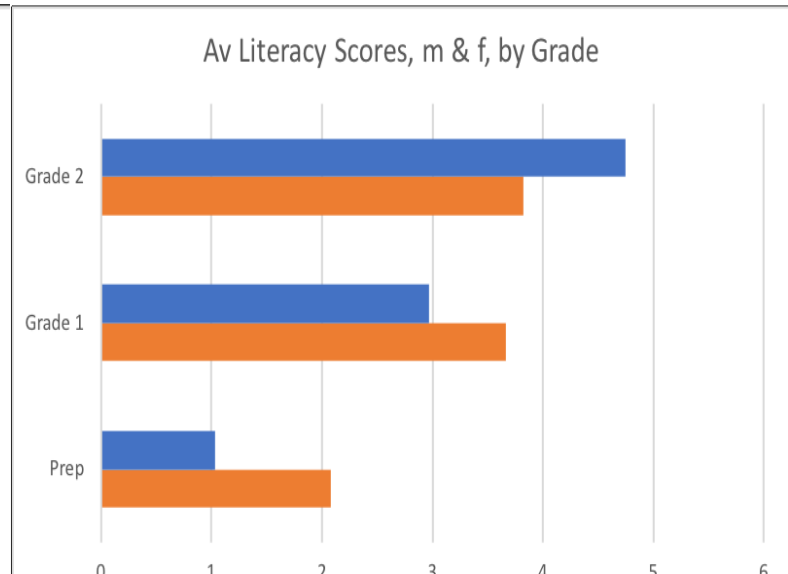
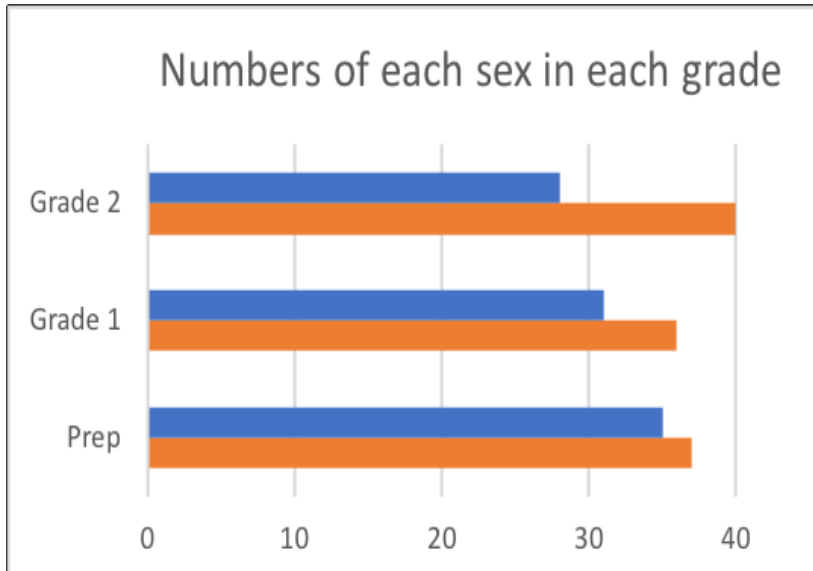
40 schools 1629 students Prep – Grade 8
(out of 78 schools - 31 primary + elementary schools, & 16 elementary schools) 12

Rural E-O schools — slightly more boys than girls



RURAL GIRLS ARE SOMETIMES NEEDED FOR HELPING TO MAKE SAGO

Rural E-O schools — slightly less bad results, and much more even



ENGLISH-ONLY
RURAL SCHOOLS DOING A BIT BETTER

NUMBERS

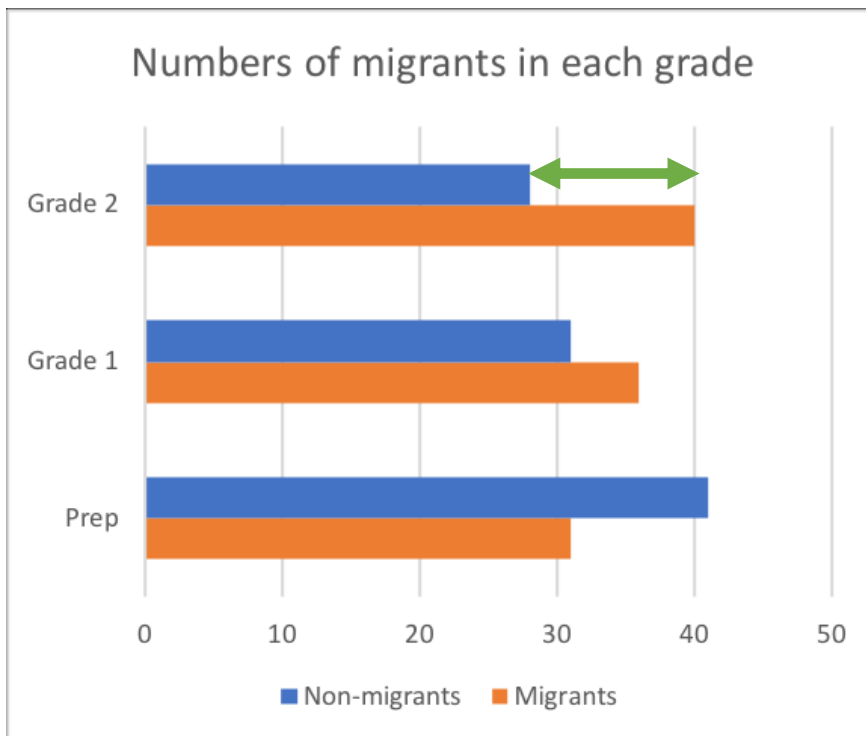
■ m ■ f

■ m ■ f

SCORES

Migration - 52% of kids are migrants!

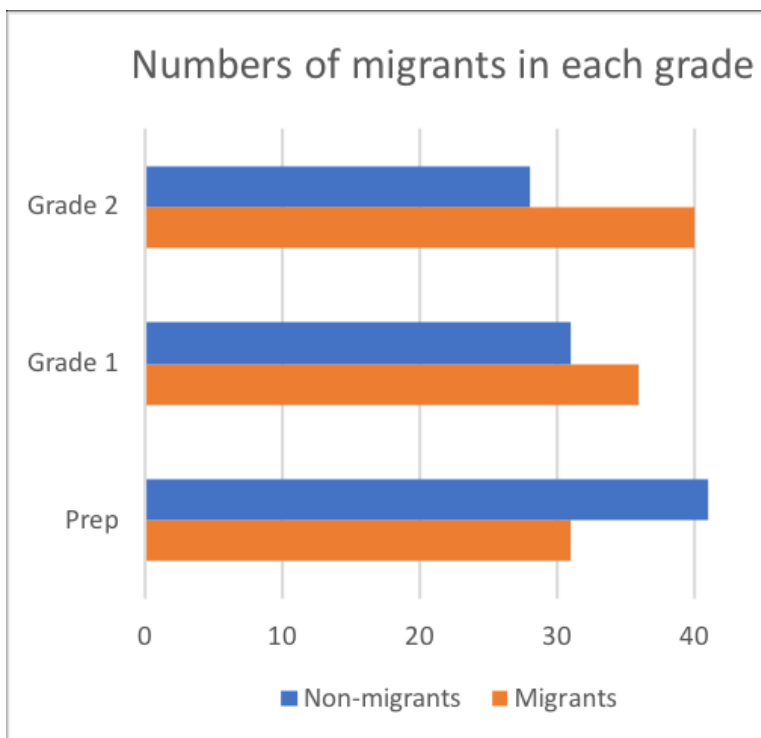
MIGRANTS BEHAVIOUR SIMILAR TO GIRLS – MOTIVATED TO PERSIST WHILE LOCAL KIDS MORE LIKELY TO DROP OUT (??)



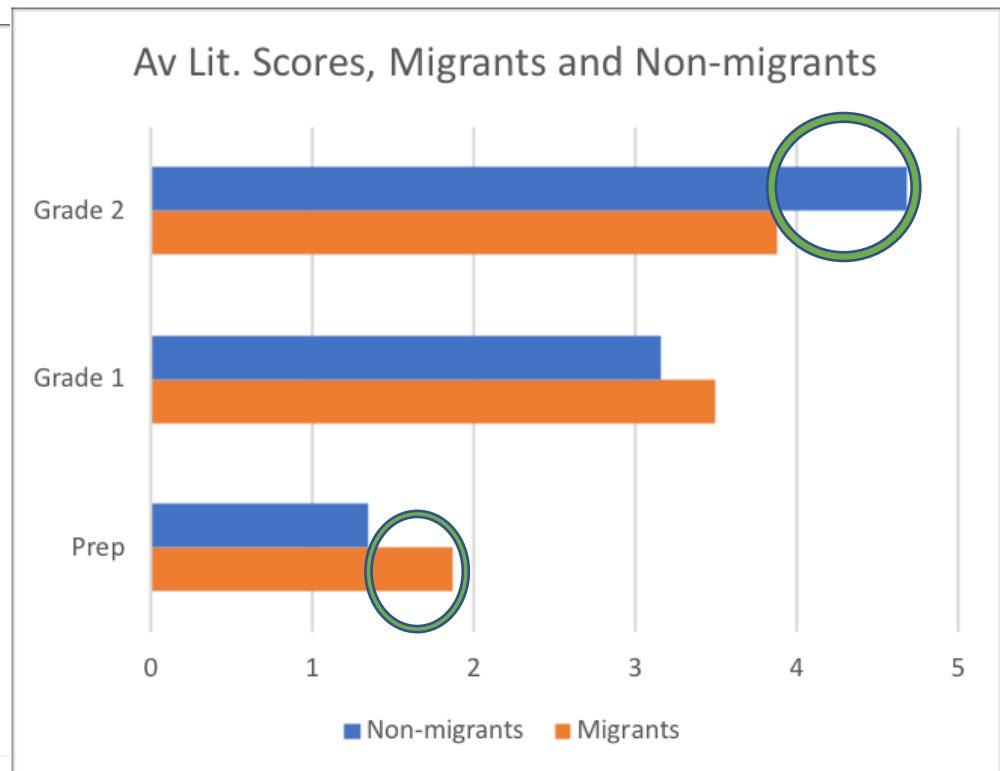
NUMBERS

Migrants do better at first

THE LOCAL KIDS STILL THERE IN GRADE 2 ARE THOSE WHO ARE DOING BETTER



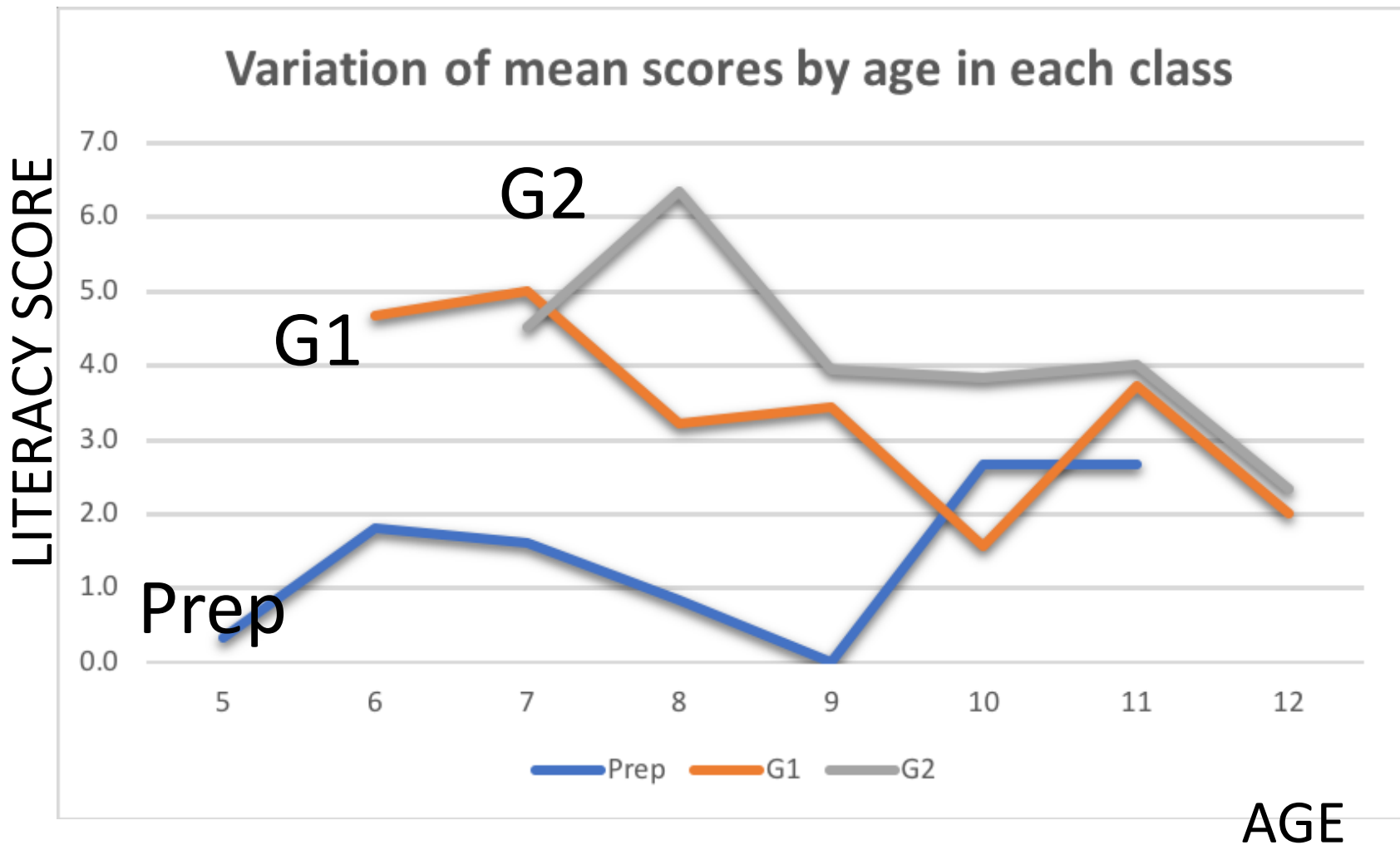
NUMBERS



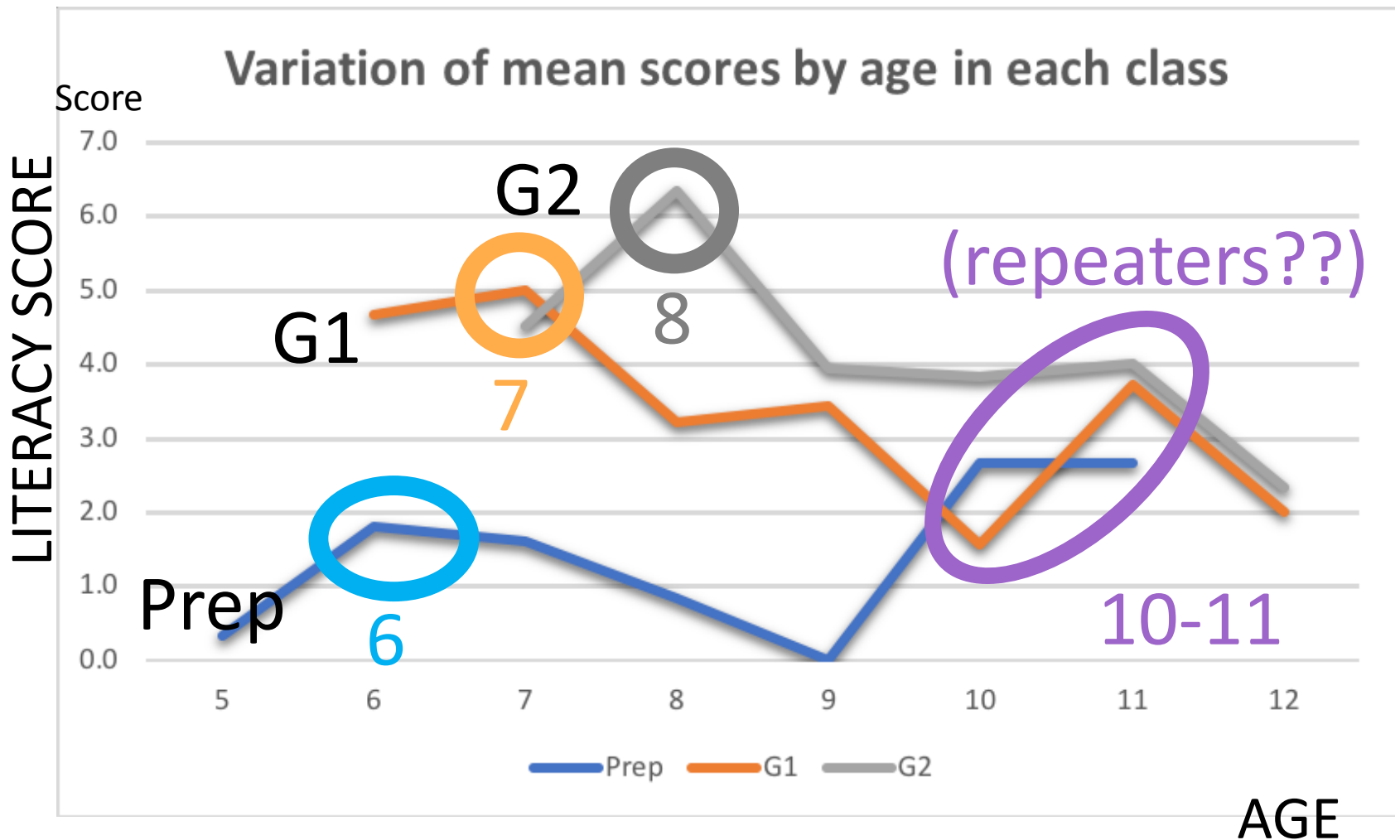
LITERACY SCORES

Age and Literacy

Age and literacy in each class



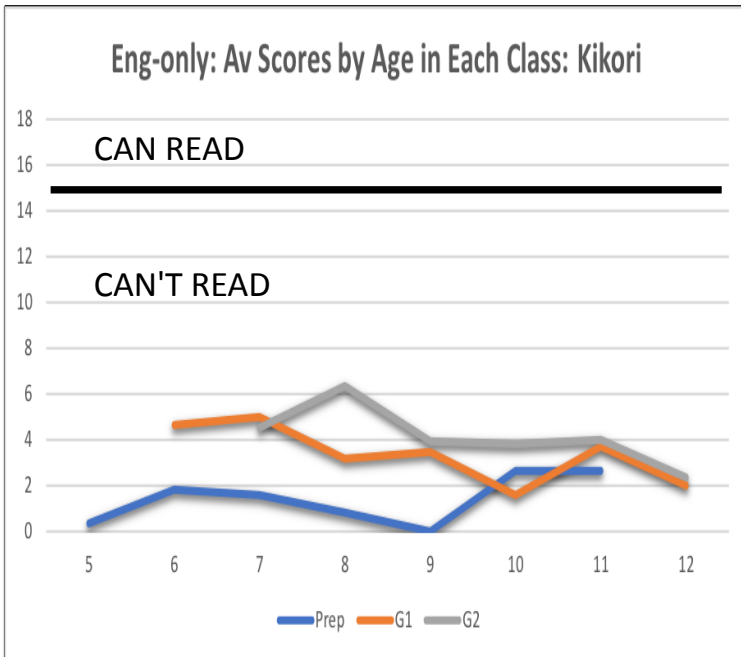
Age and literacy in each class



Comparing with the rural schools

(those using English-only methodology)

LITERACY SCORE

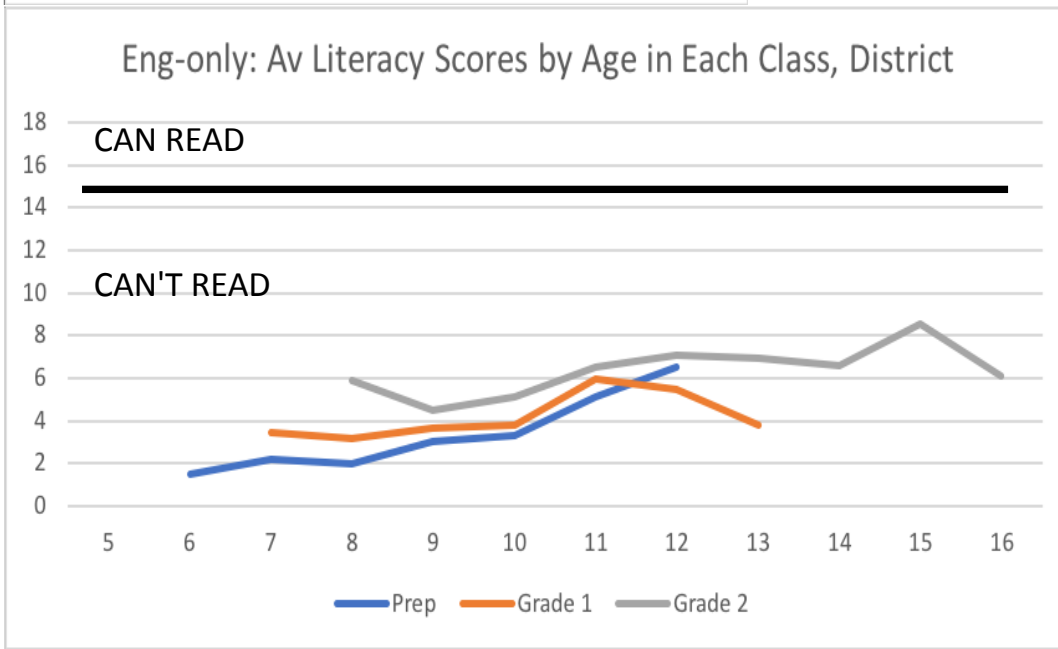


TOWN

Outlier ages removed

N=204

LITERACY SCORE

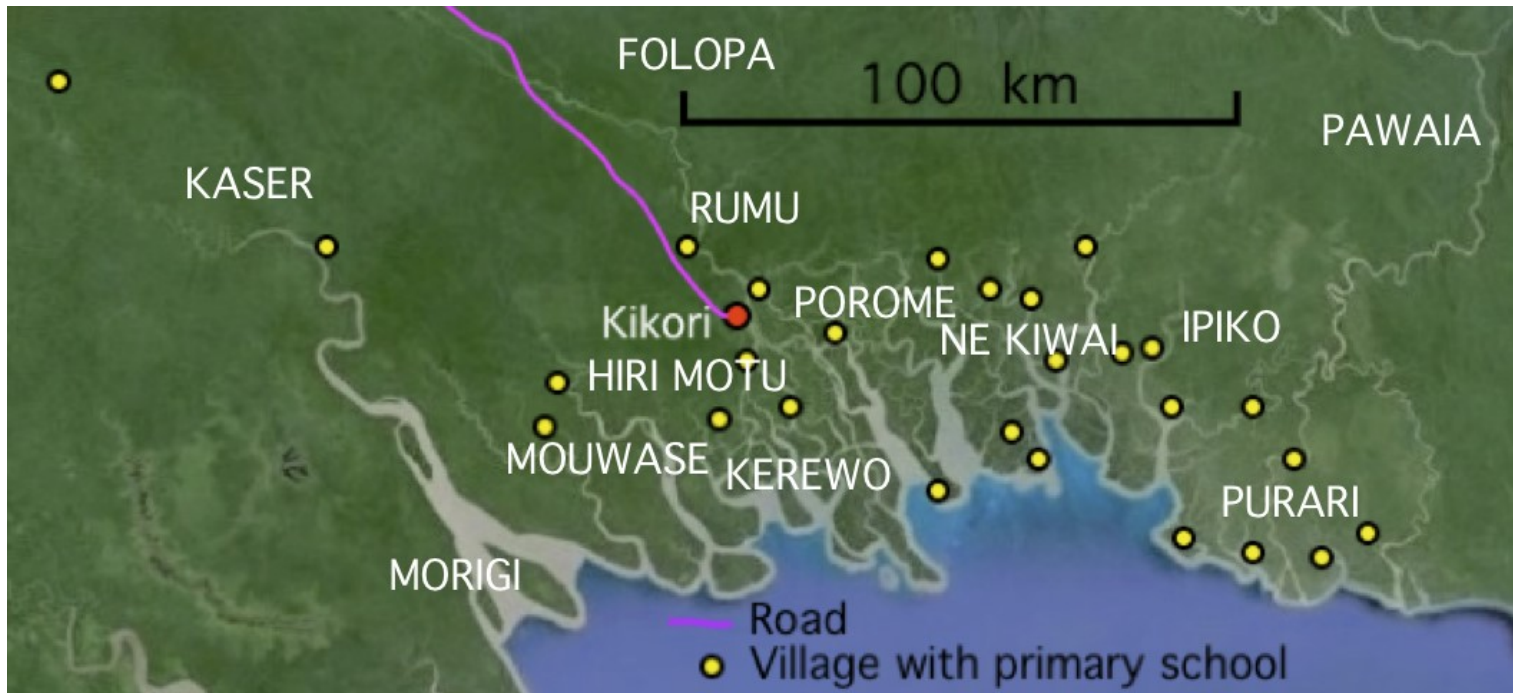


RURAL (E-O)

N=631

AGE

Language and literacy

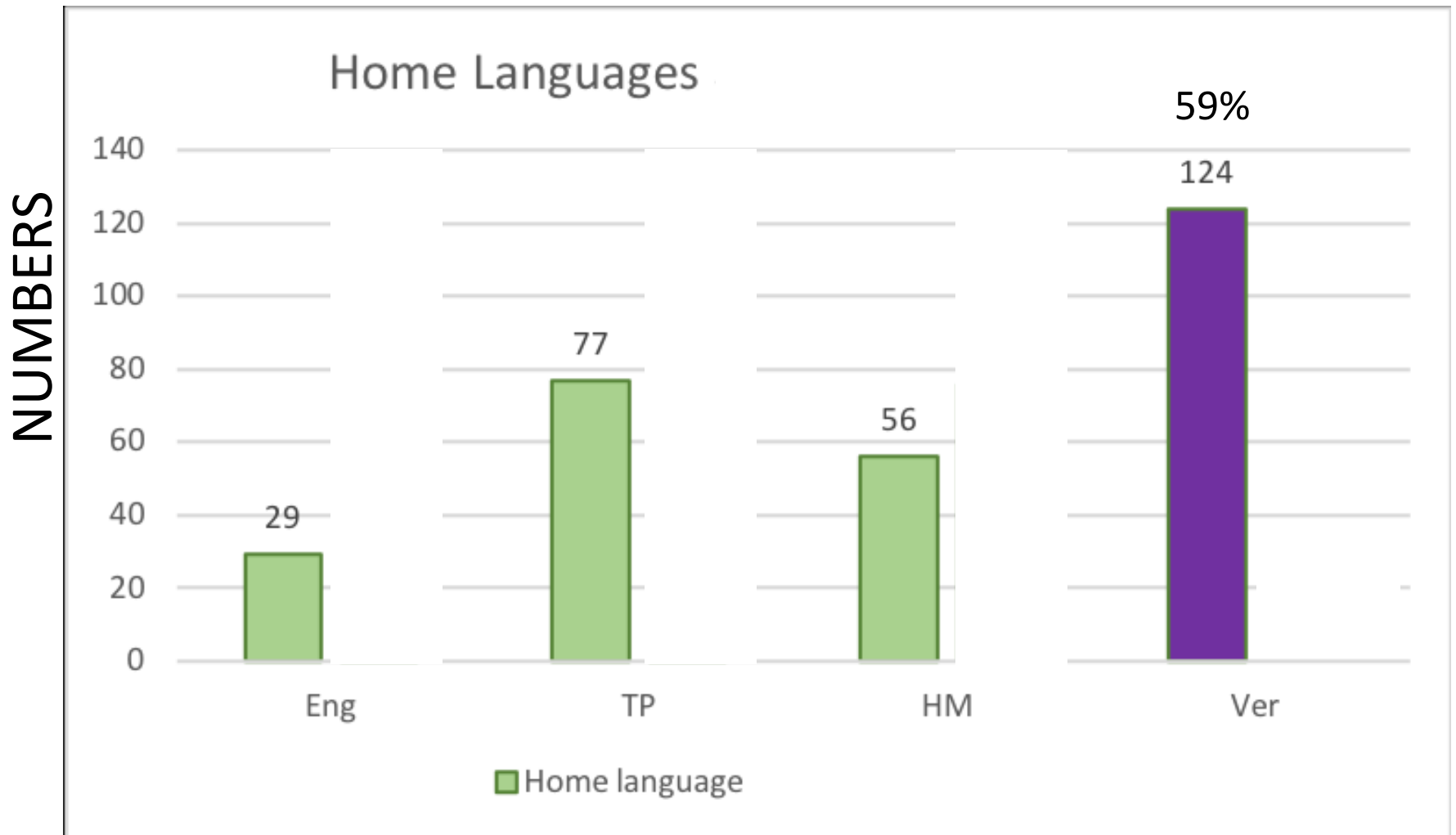


Literacy Surveys 2012-2018

1629 students

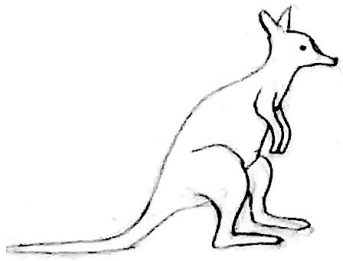

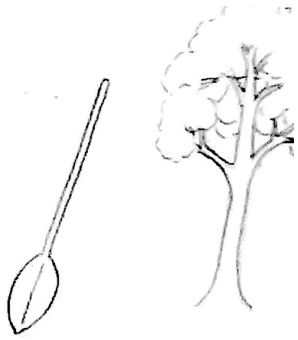



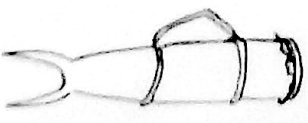


Prep – Grade 8

Numbers speaking each language



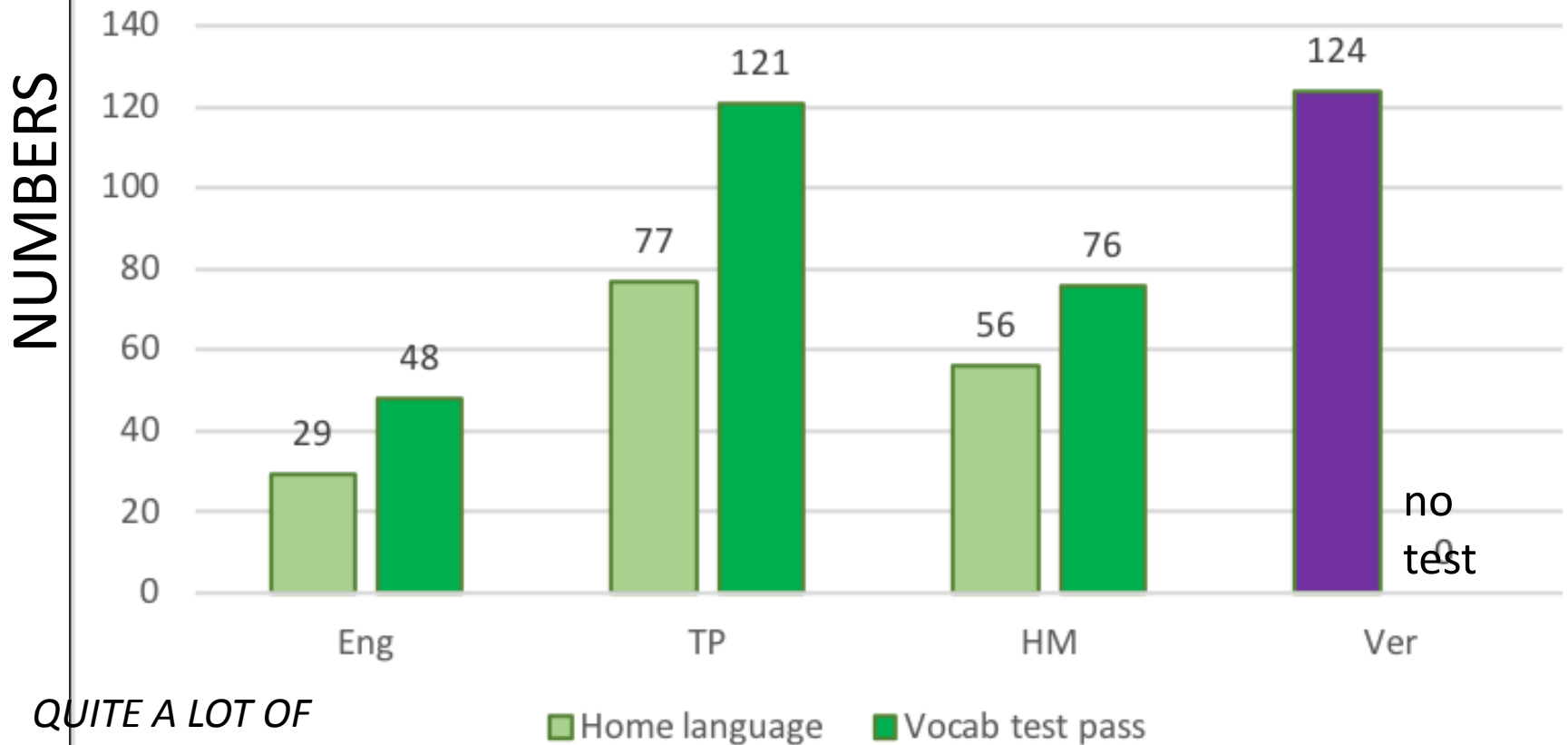
Language vocab test

- 10 items, 3 LWCs; >= 50% correct = "Pass"

			English	Motu	Tok Pisin
			wallaby	magani	sikau
			cuscus	vaura	kapul
			paddle	bara	pul
			tree	au	diwai
			bird	manu	pisin
			crocodile	huala	pukpuk
			crab	bava	kuka
			drum	gaba	kundu
			mosquito	nemu	natnat
			prawn	pai	kindam

Numbers speaking each language

Home Languages and Vocab Test Passes

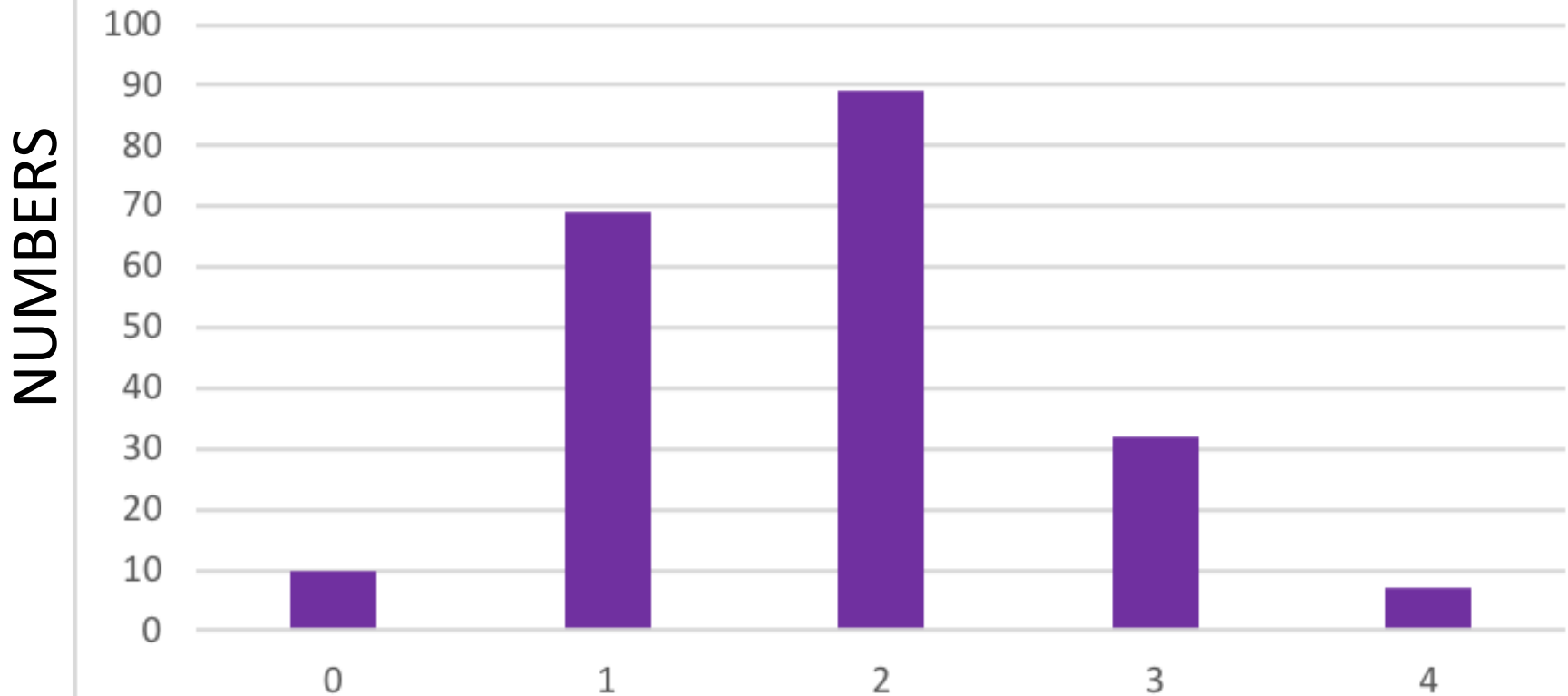


*QUITE A LOT OF
LANGUAGE LEARNING
GOING ON OUTSIDE HOME*

NB This graph ignores
multilingualism

Multi-lingualism

Numbers of Children
Speaking Various Numbers of Languages

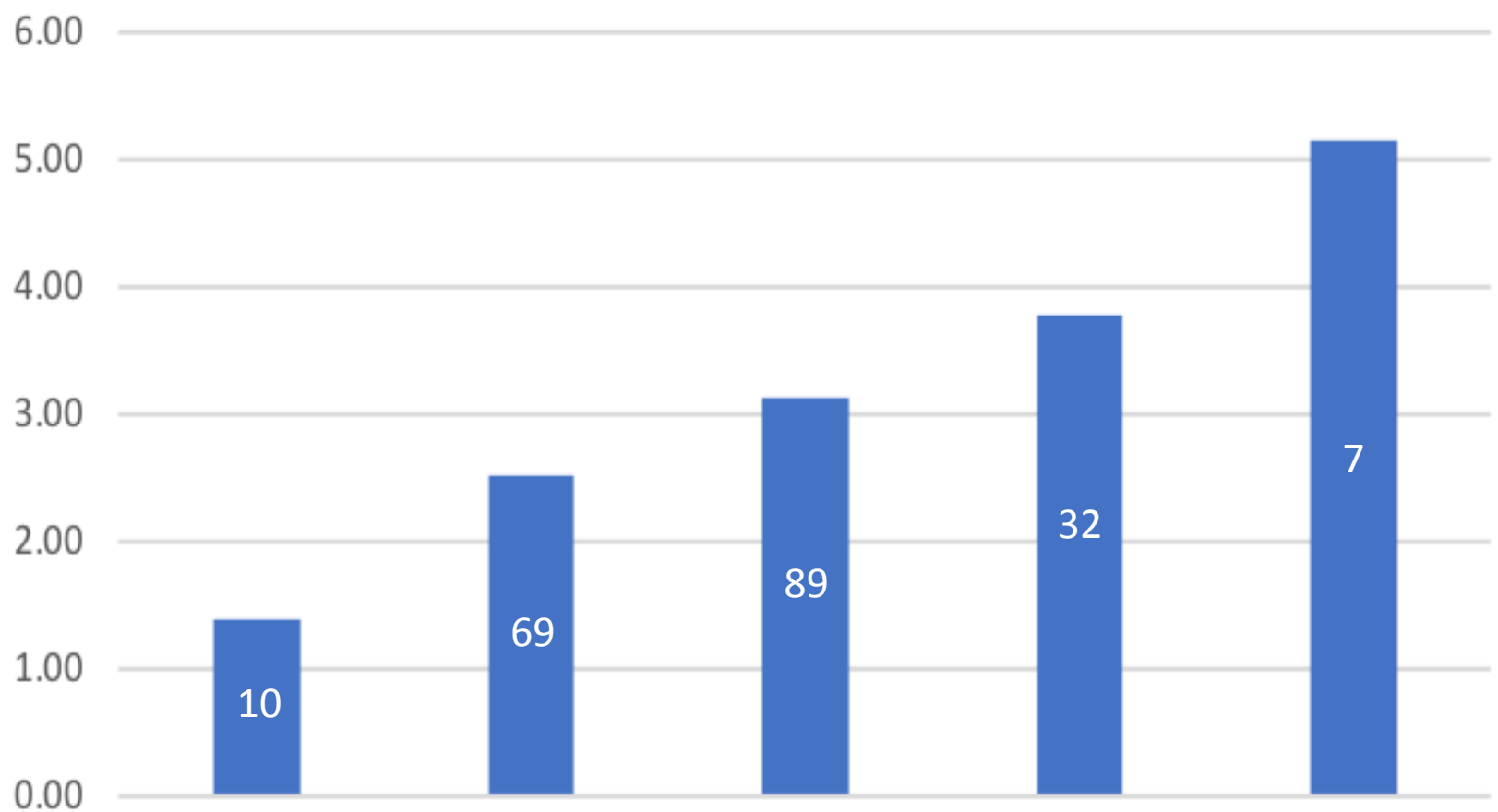


DIDNT PASS A VOCAB TEST & DON'T
SPEAK A VERNACULAR = 0

MULTILINGUALISM

Number of languages spoken and literacy score

LITERACY SCORE

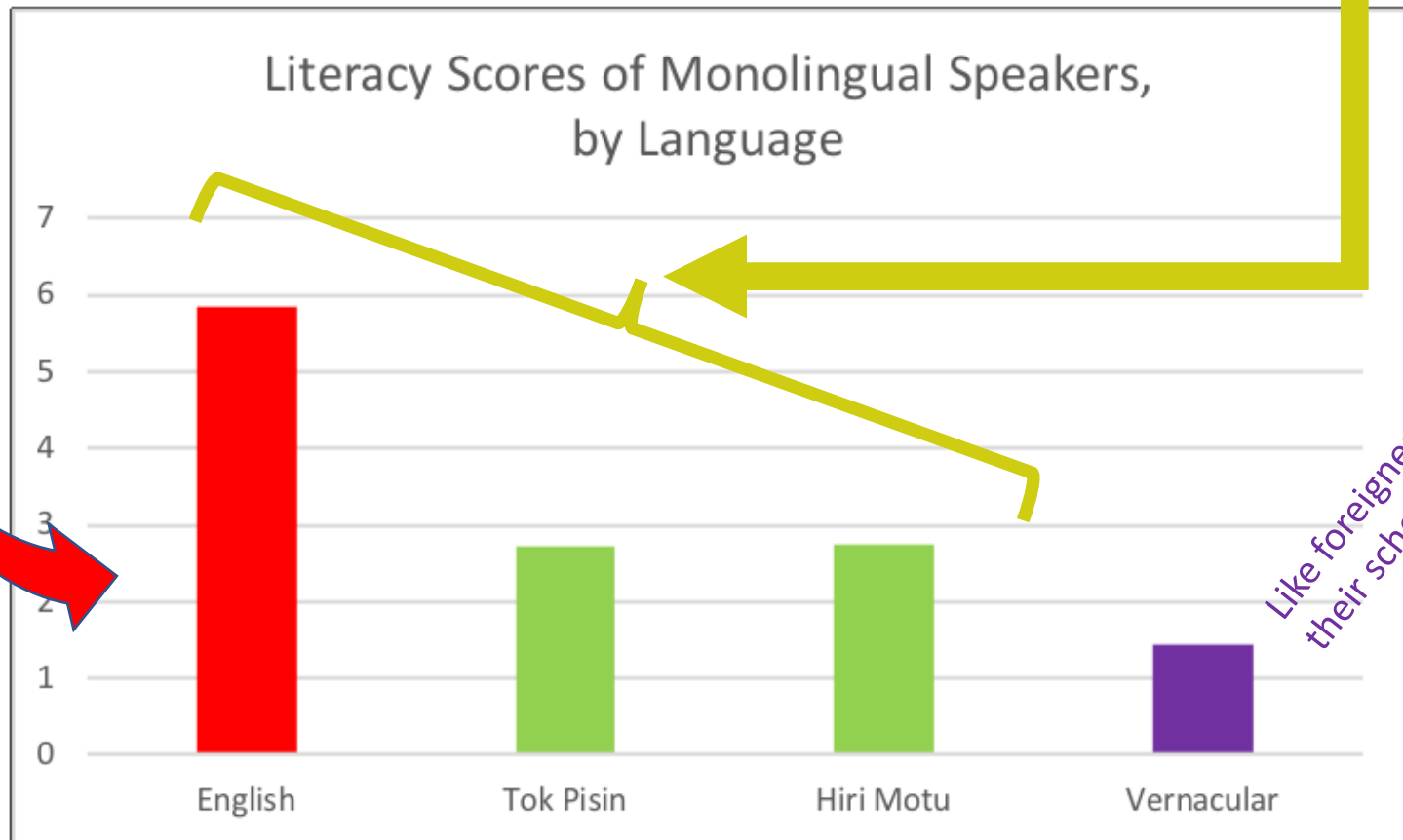


MULTILINGUALISM

Language Barriers

- language of literacy
- languages of instruction

LITERACY SCORE



Like foreigners at their school

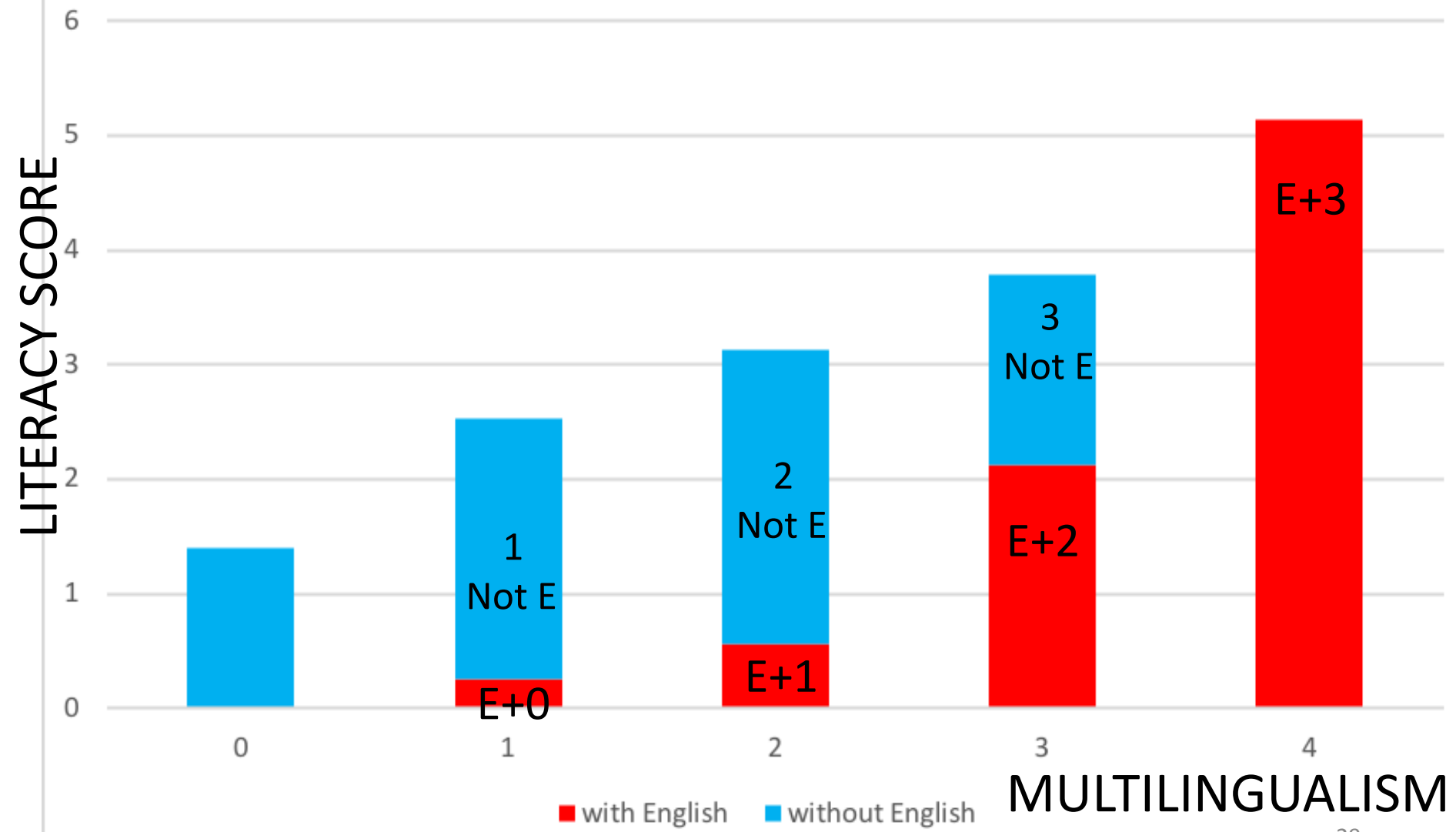
n = 7

18

16

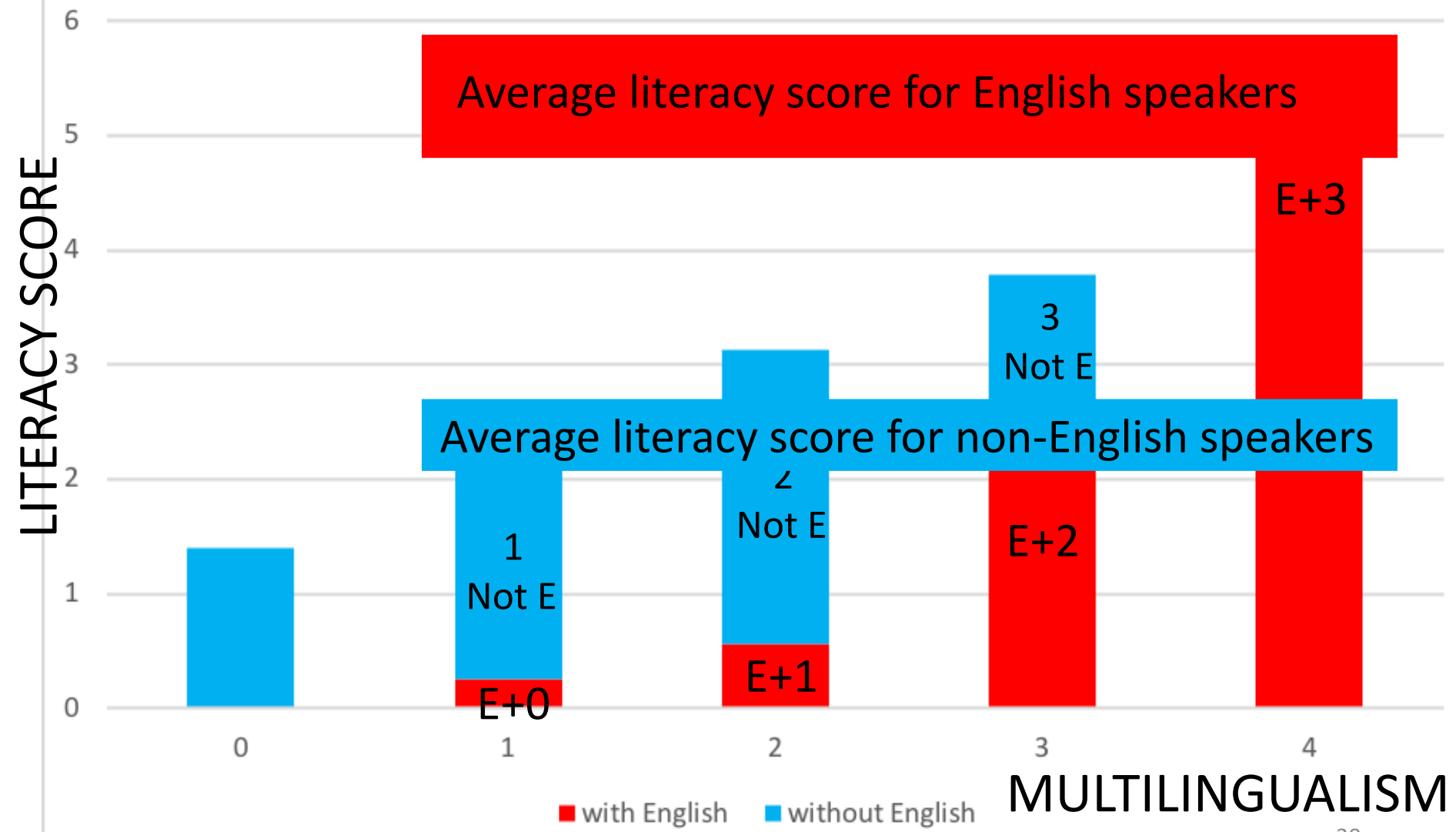
28

Number of languages spoken and literacy score showing proportions of children speaking English and not



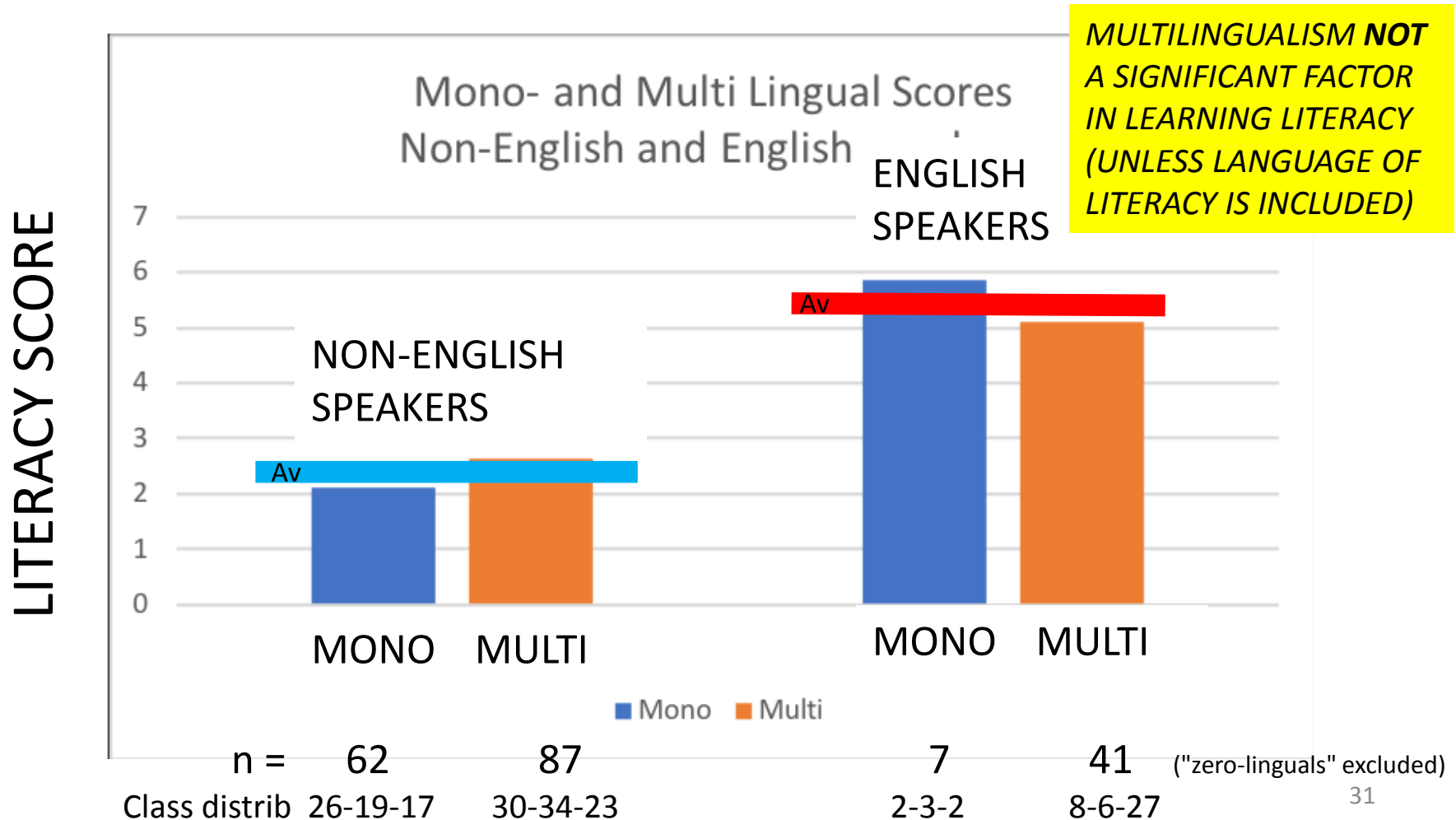
MULTILINGUALISM

Number of languages spoken and literacy score showing proportions of children speaking English and not



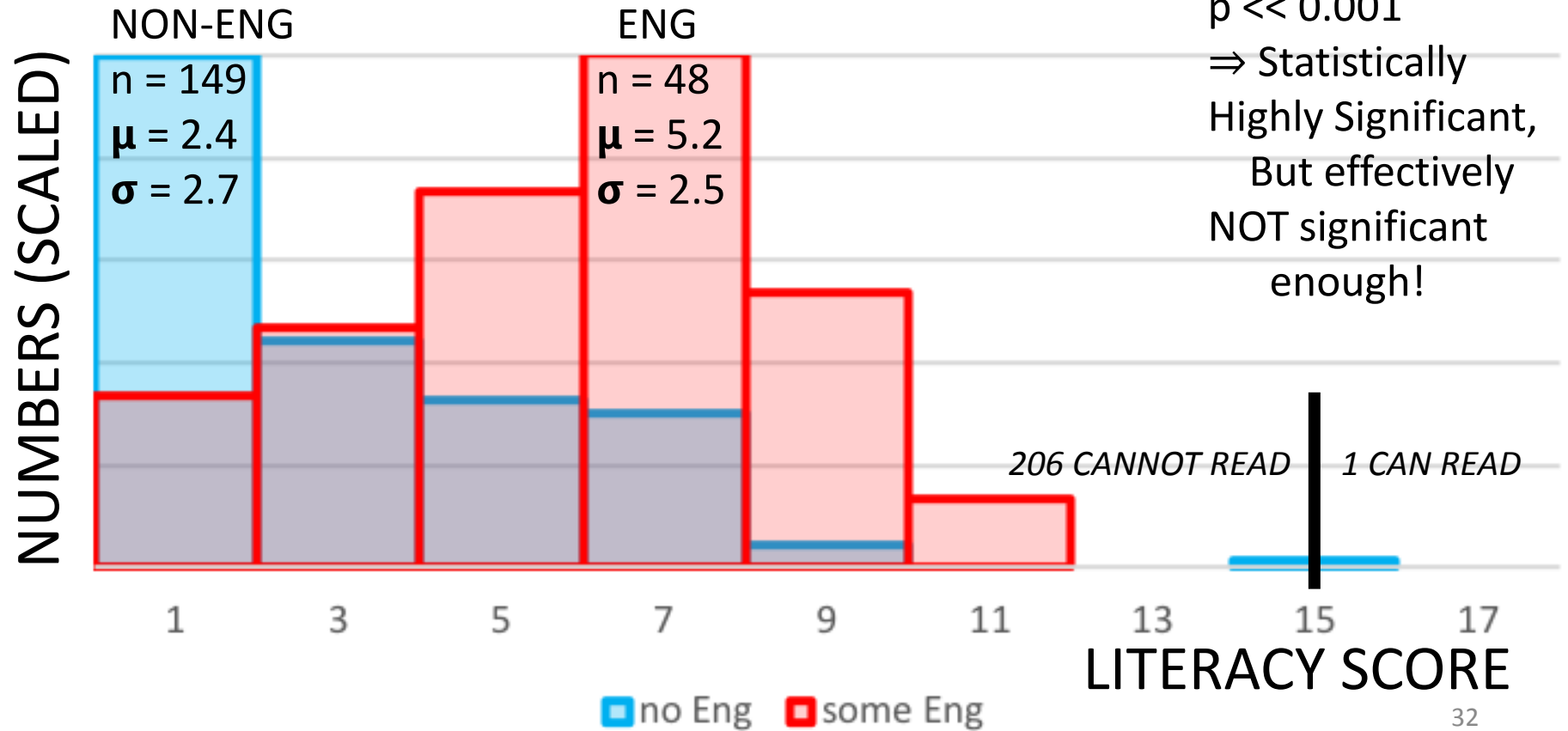
MULTILINGUALISM

Mean Literacy Scores Mono- vs Multi-linguals in Non-English & English-speaking groups



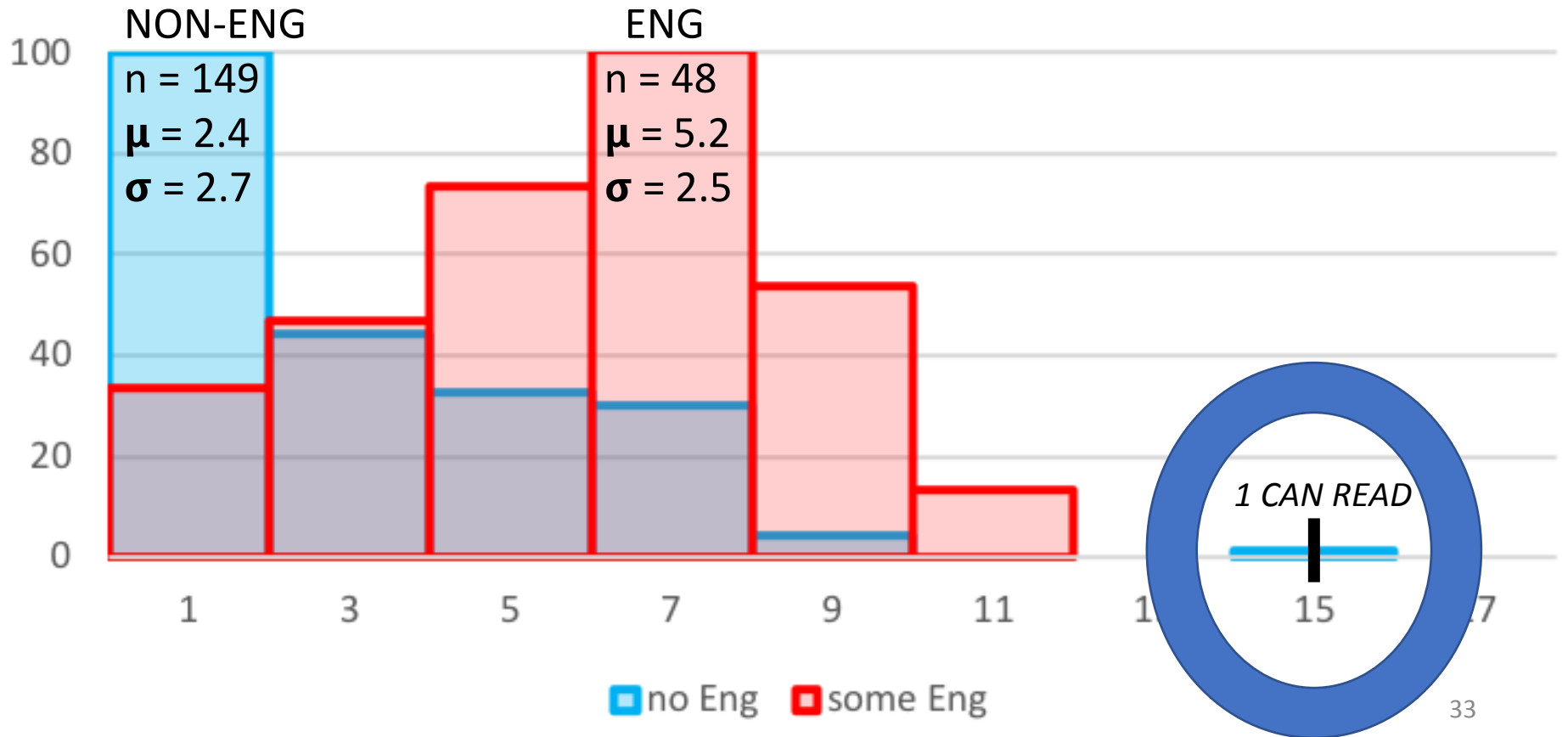
Statistical Significance

Distribution of English Literacy Scores (/18)
for English and non-English speakers
(data scaled so peaks are 100)



What about the Outstanding Exception ...

Distribution of English Literacy Scores (/18)
for English and non-English speakers
(data scaled so peaks are 100)



Wider comparison with other school surveys

- More of Kikori Primary School (Grades 3, 4, 5)
- Kikori district – 1461 additional children, 40 schools
- *Vernacular literacy also tested*

t	k	n	i	o	v	
Koriki						
	ai		ere		paku	
marea		rokoa'i		enavaka'a		
Lare mo ore ua ou kuru'a, "Na lae upa'i area rokoa'i.						
Ima ni va'o nai iku."						

English literacy survey, Kikori EP-G5

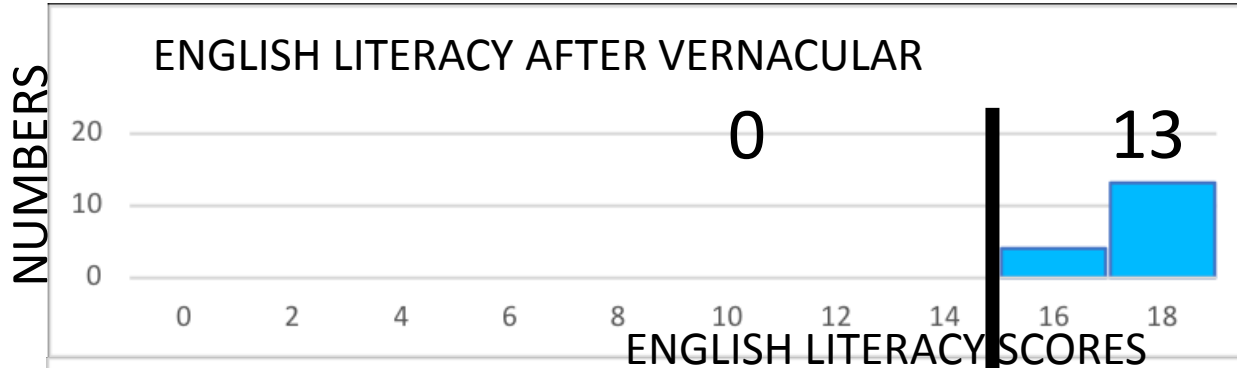
2014
-2018

LG-FIRST

n = 13

$\mu = 17.8$

$\sigma = 1.1$



100%
can read

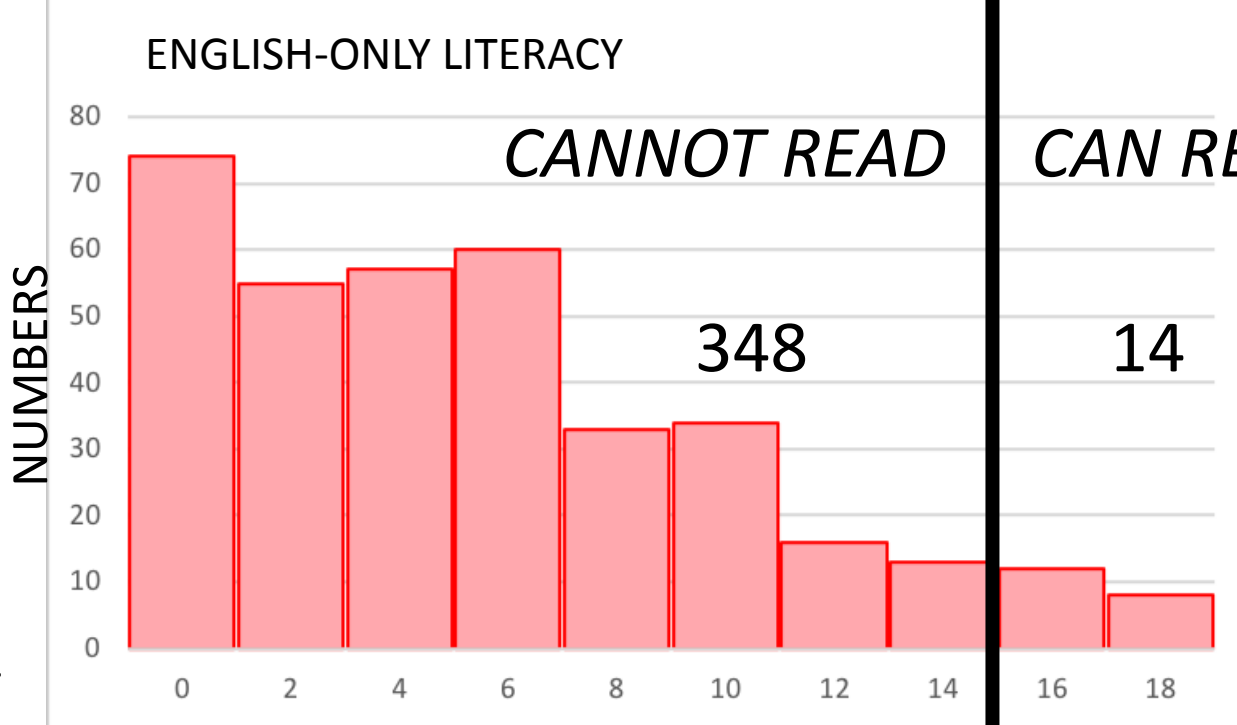
(25 x more
successful)

ENG-ONLY

n = 362

$\mu = 5.0$

$\sigma = 4.5$



CANNOT READ

CAN READ

<4%
can read

T-test

p << 0.001

HIGHLY

SIGNIFICANT

!

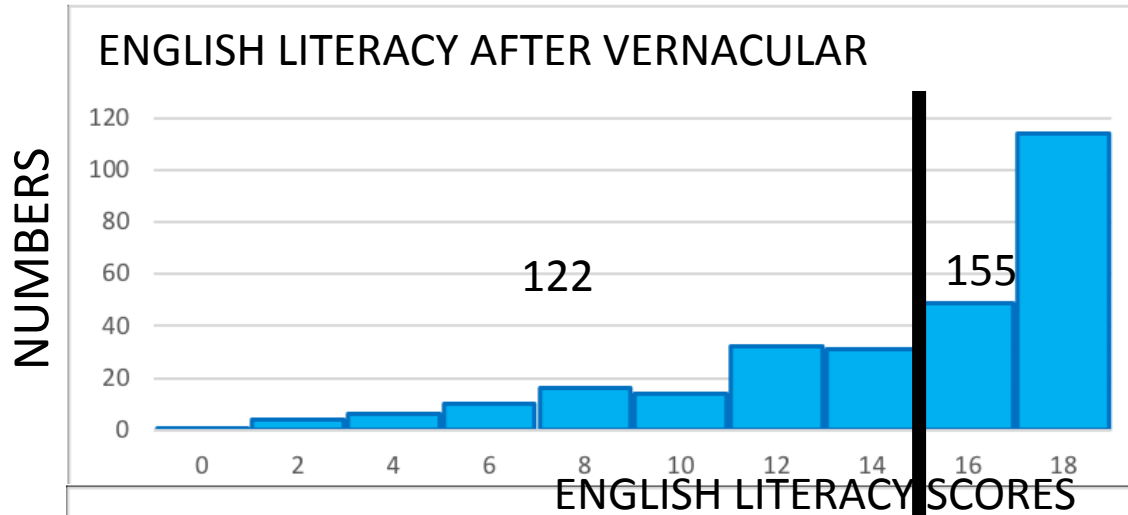
English literacy scores, district: EP-G8

LG-FIRST

n = 277

$\mu = 13.9$

$\sigma = 5.2$



56%
can read
English

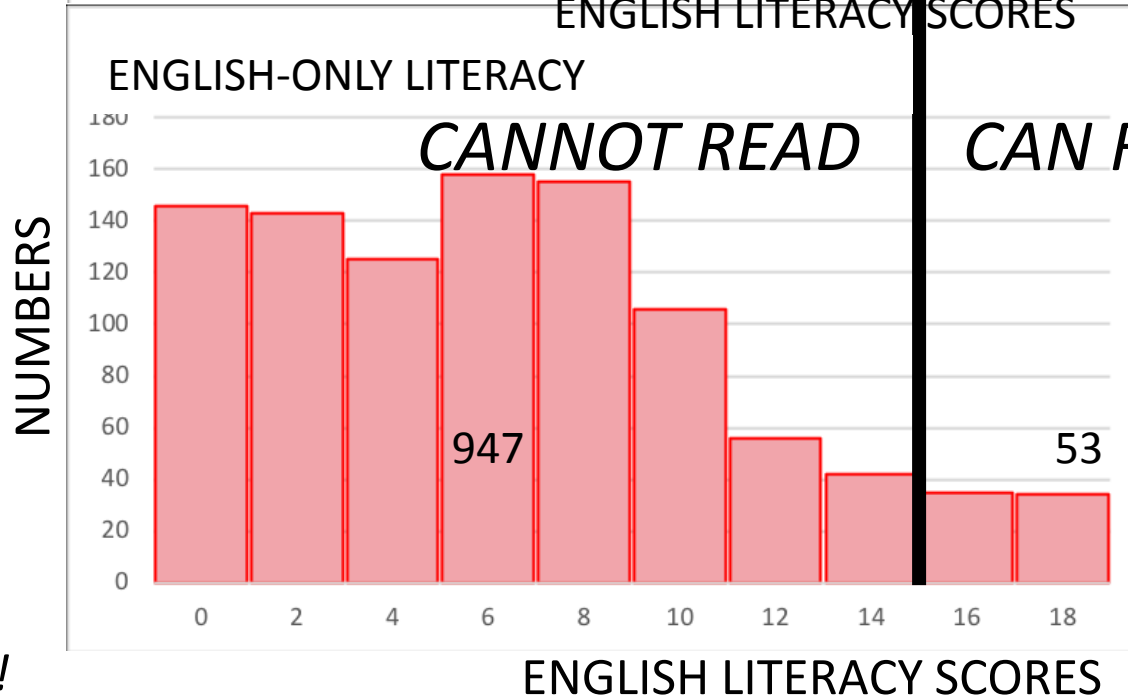
(11 x more
successful)

ENG-ONLY

n = 1000

$\mu = 5.9$

$\sigma = 4.1$



5%
can read
English

T-test

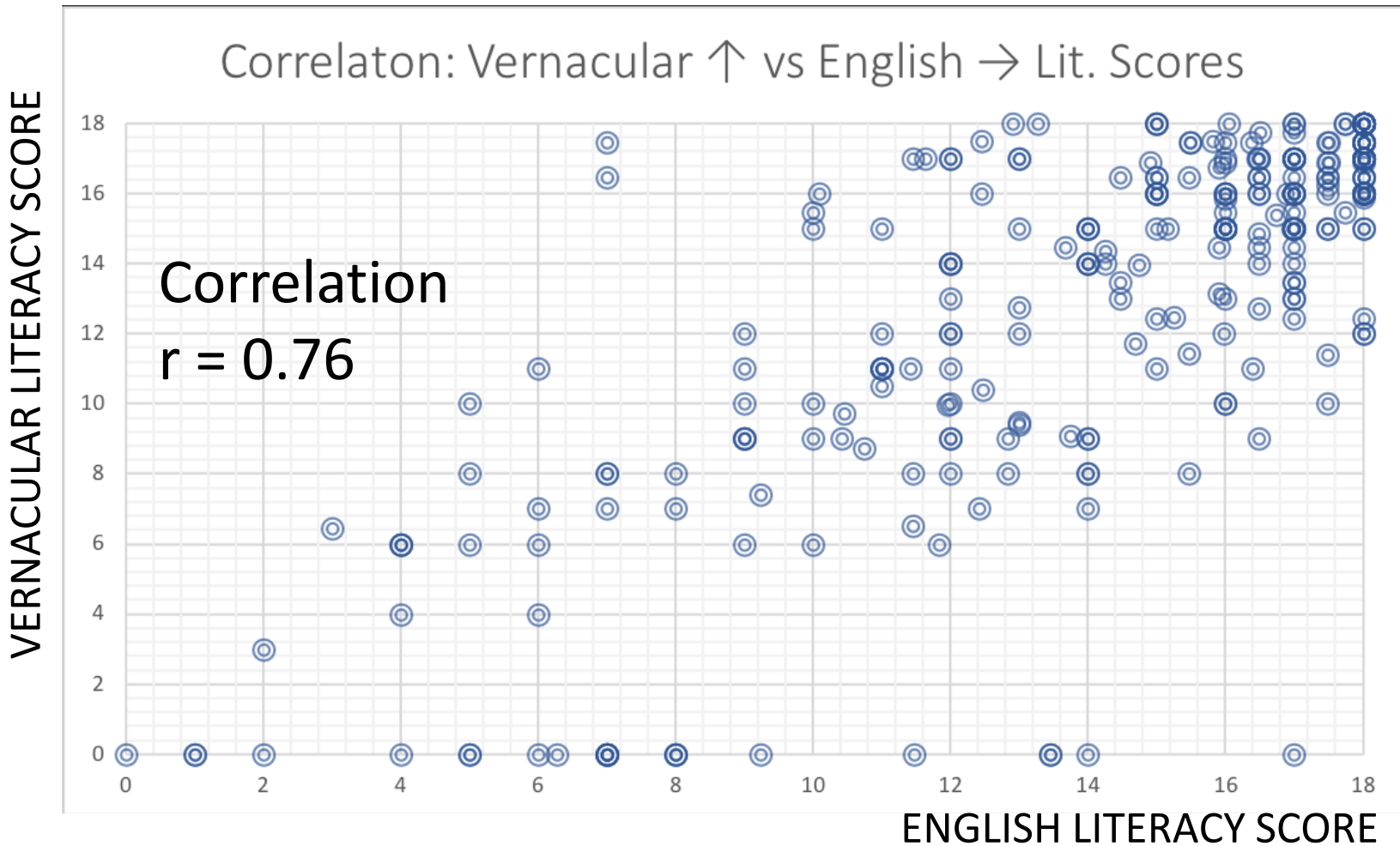
p << 0.001

HIGHLY

SIGNIFICANT!

Vernac vs English literacy scores

(for students who have done vernacular first)



n = 277

SUMMARY – for Kikori Elementary

- Female, Migrant, Timely Yearly Grade Advancement
⇔ minor initial advantages.
- Knowing a Language of Instruction (LOI) helps a little.
- Knowing the Language of Literacy (LOL) helps more.
- *But none of these are enough to acquire literacy at this school - too few teaching days for each child, too few speak LOL, no literacy in LOI.*
- **Learning to read in an Indigenous Language before starting English literacy has been hugely successful, 25-fold, but was done for only a small number of children!**

CONCLUSION

- **Town schools – USE COMMON LANGUAGE OF CHILDREN**

(1) Teach literacy in a common language of the majority of the children (e.g. Tok Pisin) as a start.

(2) That will prepare your children to successfully learn to read in the the national language (English for PNG).

(3) In PNG knowledge of Tok Pisin literacy will also help your children to communicate with many other non-English speaking people (and to read and write place names correctly).

- **Indigenous language speaking communities – TAKE HEART!**

By valuing your language and choosing to teach literacy in your language to your children, you can do two more good things:

(1) You can prepare your children to successfully learn to read in the national language (English for PNG) – more than 10 times more successfully than going straight for English.

(2) You can raise the status of your language in the eyes of your children, your community, and your country.

THE END

Comparing town to rural schools

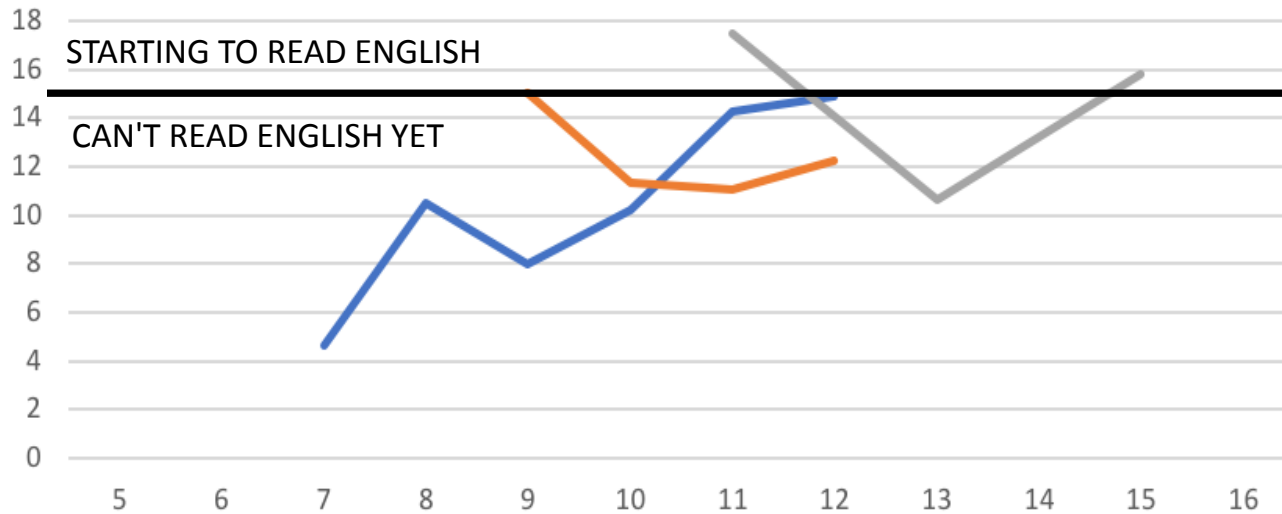
(those using English-only methodology)

- Kikori town Kikori rural
- Main class age ranges

Prep	6-7	6-10
G1	7-10	6-12
G2	8-11	6-15
- Ages of peak literacy score averages

Prep	6 (2/18)	11-12 (5-6/18)
G1	7 (5/18)	11-12 (5-6/18)
G2	8 (6/18)	10-16 (6-8/18)

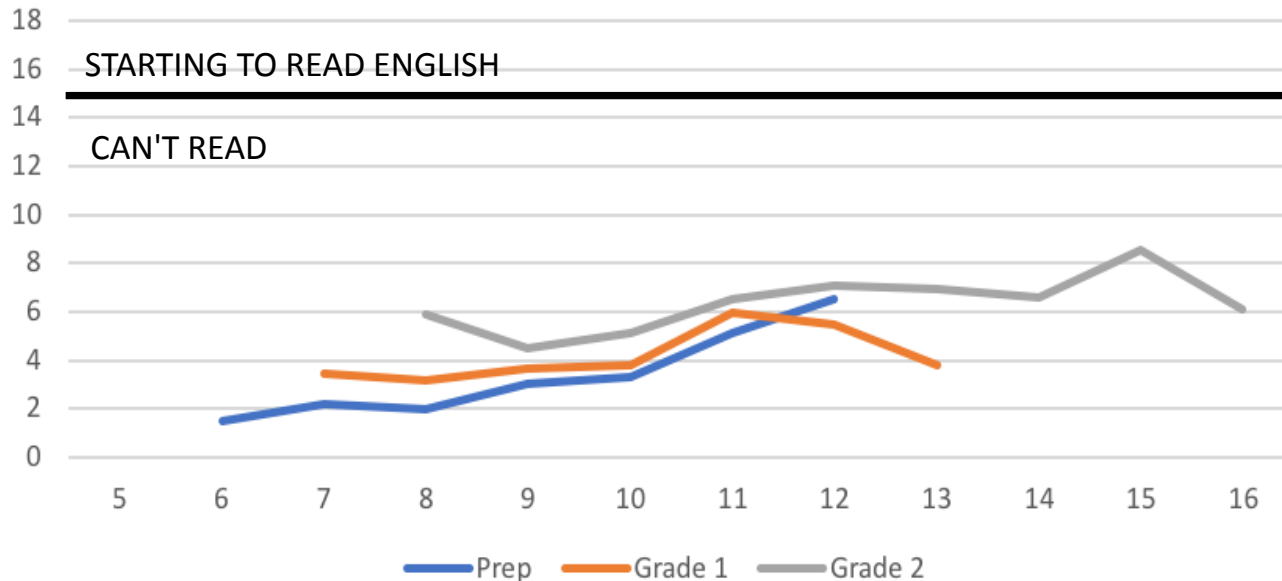
HL-first: Av Literacy Scores by Age in Each Class, District



Outlier ages removed

**RURAL
LANGUAGE
FIRST** N=71

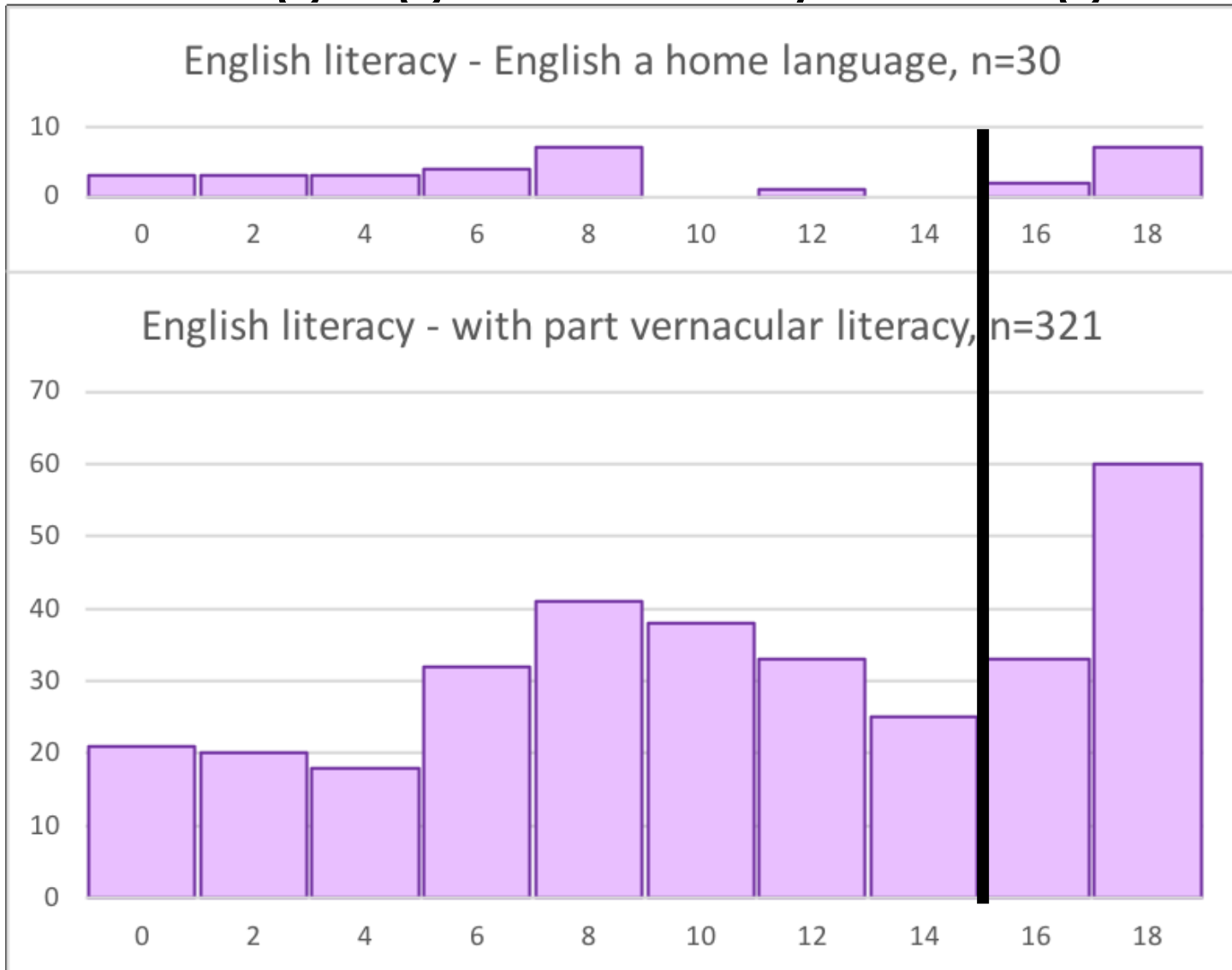
Eng-only: Av Literacy Scores by Age in Each Class, District



N=631

**RURAL
ENG ONLY**

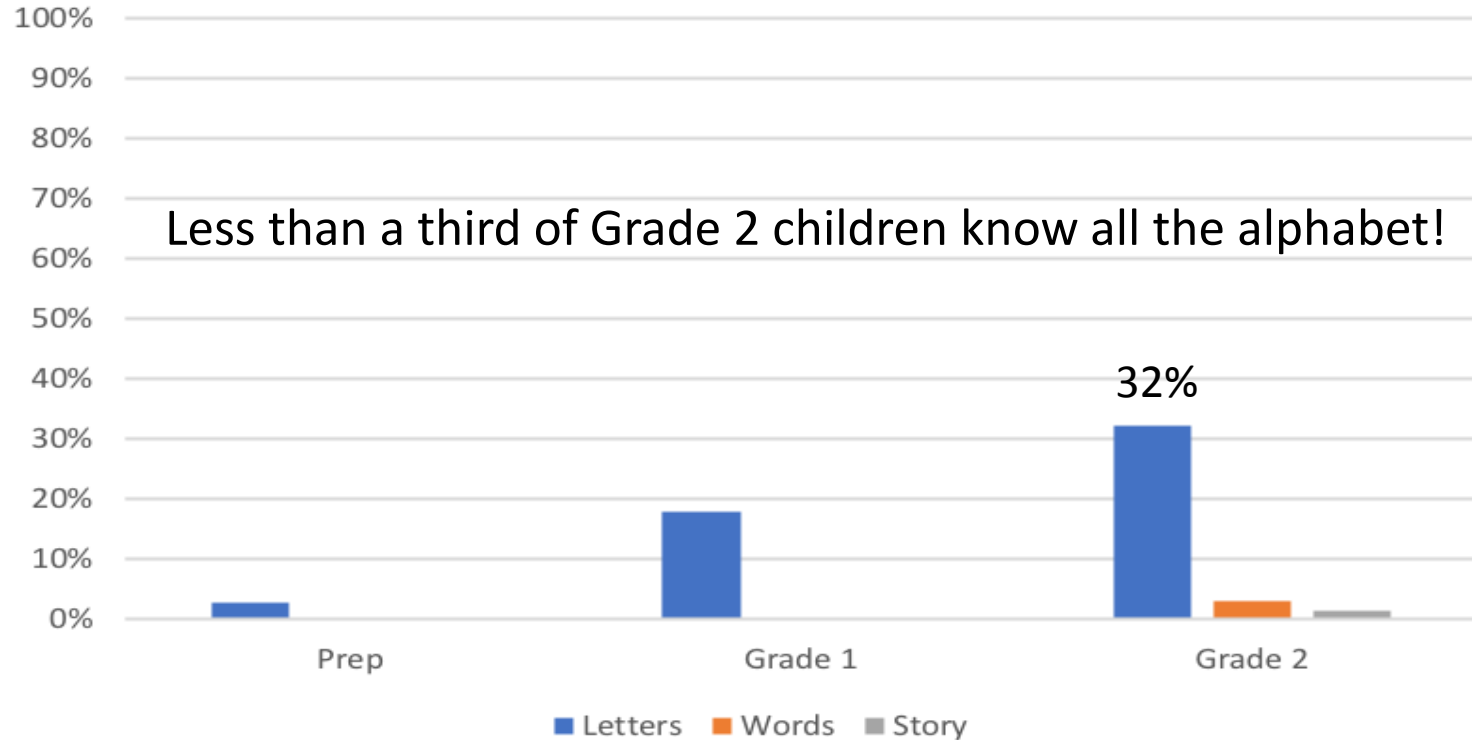
English as a home language & bridging too early to English



Progress in stages of literacy

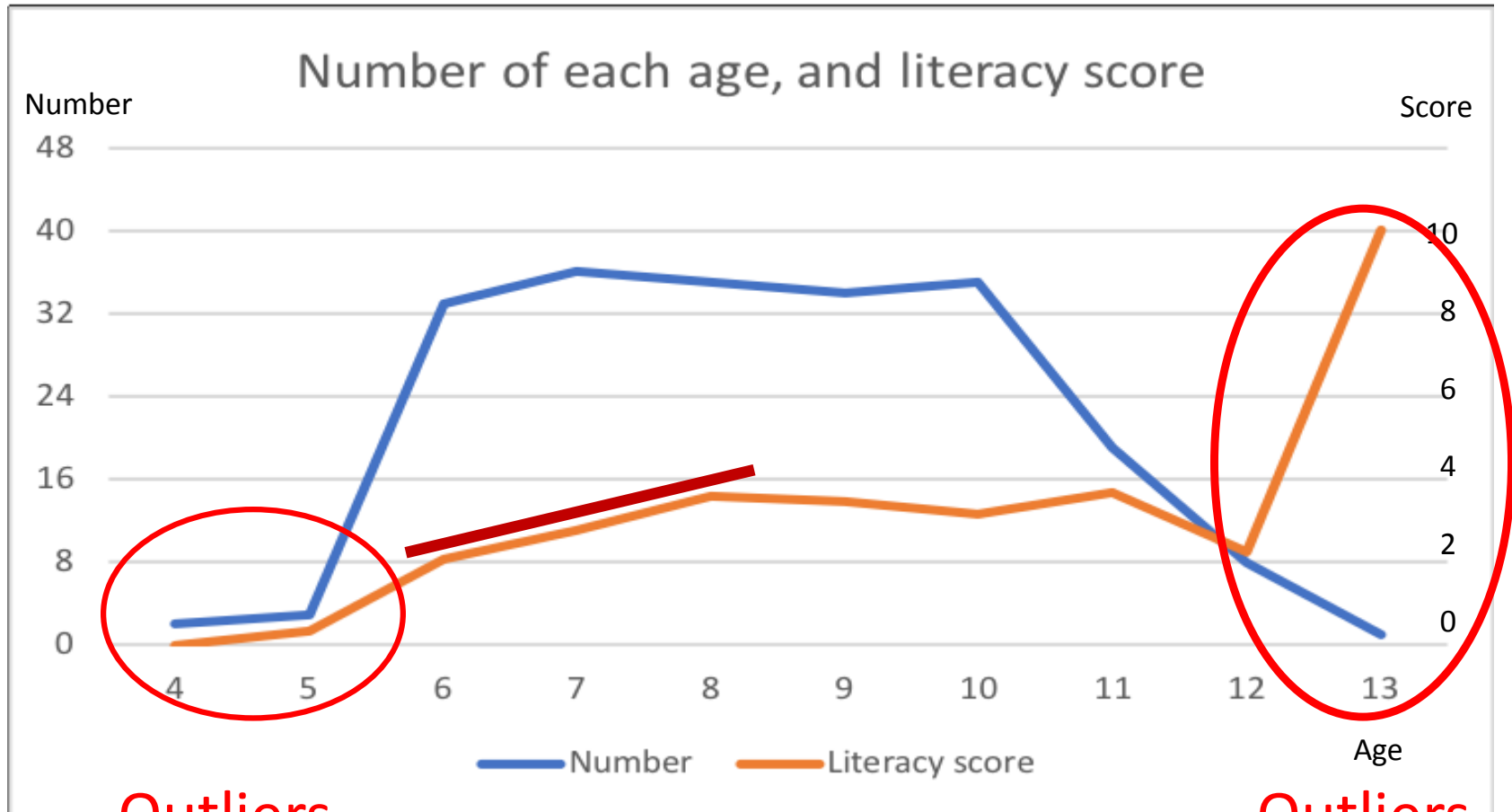
% DOING WELL

Percentages in each class of children with good grasp of letters, English words, and English story reading



50 children know all letters
94 know some but not all letters
63 children scored 0 in test (13 in grade 2)
207 children altogether

Age Main Range 6 – 10 years old
Mean age-literacy scores 2 - 4



Outliers

NOT STRAIGHT-FORWARD!!

Outliers

SUMMARY

- Class – students at K make extremely slow progress (+1/18)
 - possible to learn to read English, even in E-Prep for some, if start with Home Language literacy
- Sex – girls do slightly better in Prep at K (+1/18)
 - boys at K drop out more quickly than girls
 - boys doing about the same as girls, in other schools
- Migrants – migrants do slightly better in Prep at K (+0.5/18)
 - non-migrants at K drop out more quickly than migrants
- Age – older students at K doing worse than younger
 - years of failure is bad; need to learn basics quickly
- Multilinguals – no advantage unless languages of instruction (+4/18) or instruction (+12/18) are included
- Language of literacy – most important factor
 - huge advantage if language of literacy is chosen to be a language that the child knows.
 - transfer from vernacular literacy to English literacy seems to work well (if vernacular literacy is done properly)
 - only tiny fraction of students at K have this advantage
 - nowadays only a few rural schools utilize this advantage