Mysteries and myths of reading and their relevance for East Asia

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This presentation will cover

Challenges of reading acquisition by lower-income students

How the brain learns to read, and its implications for instruction

Perceptual and cognitive challenges of Asian syllabic scripts

Instructional and research implications for improving learning outcomes in east Asia, particularly for lower-income students

Measuring reading fluency in east Asian countries, prospects for inexpensive testing
Goal: Actually Educating All

Education for All:
**All** must be served effectively
In poor countries only the few best students learn

Early-grade reading must be pitched to the lower end

Below-average students must be reached

Theoretical distribution of student performance
Why do many poor students learn less? What to do?

Visual issues: complexity of shapes, letter size and spacing
Methodological uncertainties
  Reading speed
Instructional time use
Some activities teach literacy more reliably than others
  For the middle class, every method can work
Which set of activities would be most parsimonious?
  More doable by low-educated teachers? And why?
Perceptual learning of scripts

Hardly noticed in middle-income schools
Problem in low-income schools and adult literacy
Perception issues crucial in early reading

Students may be reading less often than we think!!

3% of time estimate in one study

particularly when they lack textbooks

Can they distinguish the blackboard or book letters?

Do pictures and colors aid early readers?

How easily do students learn complex shapes?
We always recognize letters from features:
Crowding spoils letter recognition outside the central visual field.
Center of the eye initially reads 1-2 letters, 4-5 letters for expert readers.
Our visual system reads fastest when letters on blackboards and textbooks are big and rather loose.

Once upon a time there was a kingdom with a good king named Midas.
Letters too small, too crowded slow down reading

Critical letter size
Critical spacing
Distance from blackboard

Research by D. Pelli et al. (2006, 2007 etc)

Issues severe for those not habituated to the dense script
even if they are relatively fluent readers
We easily get used to dense letters

Initially beginners cannot easily tell letters apart
After a few days of practice we get habituated.
The children who grow up around print and TV may get habituated early, even if they do not learn to read.
Then we cannot really perceive that others may not be used to them
So textbooks and children’s books are often written in print that is too small and crowded and that slows kids down.
Khmer: Angkor Wat modern
Ottoman Turkish grade 1 textbooks about 1925, by Ali Haydar

Contemporary Urdu
Fluent readers do not realize the need for clear, spaced letters early on.

Teachers scribbling fast in grade
Example from Nepal
Letters are too far, too small
No wonder literacy efforts fail

Experienced readers do not realize the extent of the problem
Do these students discriminate among letters of the fuzzy blackboard from this distance?
Malawi
What impresses you most about this scene?
Cambodia: Deteriorating whiteboards
Blackboard in Mozambique
Laos: Grade 1 flash cards - letters too small
Perceptual implications for reading

Simpler shapes are learned fastest
More complex letter shapes take longer to automatize
Larger numbers of letters take longer to tell apart and automatize
Dense print, small letters are read more slowly
Irregular spelling is learned more slowly

These are more reasons for teaching letters one by one
Research-based recommendations for early grade 1 text

by M. Martelli and G. Zoccolotti, U. of Rome psychology dept.

Blackboards and flash cards should have really big, separated letters
Sit no more than 5 meters from blackboard
Books 24 point font, double spaced
  3 spaces between words
Picture size minimal, perhaps few pictures

Asian scripts are visually complex – teach them in small bites!
more on this later
The neuroscience of reading

Memory principles
Letters = Object recognition
Visual complexity in languages and scripts
The fluency paradox

If you don’t read fast enough, by the end of a sentence you forget the beginning!

Why do students need a minimum reading speed?

Grade 1 reading fluency matters all the way to the university!
A simplified sketch of memory

Very brief amount of time
Very limited capacity

About 7 items for simple text
12 seconds at most

Cognitive networks

Working memory

Long-term memory
To read an average sentence in an ‘average’ language roughly...
7 items in 12 seconds...

students must read at least a word per 1-1.5 second
with 95% accuracy (correlates .87 with speed).
45-60 words per minute minimum

7 words in 12 seconds equals 45-60 words per minute!
Chunking needed to put much info into working memory

With some practice the mind joins items of information together
Chunked pieces pass through working memory as one
And you can only form big chunks from smaller ones
An illustration of chunking
Patterns make easy chunks pattern detection therefore facilitates automaticity

<table>
<thead>
<tr>
<th>a</th>
<th>e</th>
<th>i</th>
<th>o</th>
<th>u</th>
<th>Letter</th>
<th>Fatha</th>
<th>Qasra</th>
<th>Dhamma</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>ba</td>
<td>be</td>
<td>bi</td>
<td>bo</td>
<td>bu</td>
<td>ضُ</td>
<td>ضَ</td>
<td>ضٌ</td>
</tr>
<tr>
<td>C</td>
<td>ca</td>
<td>ce</td>
<td>ci</td>
<td>co</td>
<td>cu</td>
<td>صُ</td>
<td>صَ</td>
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<tr>
<td>D</td>
<td>da</td>
<td>de</td>
<td>de</td>
<td>do</td>
<td>du</td>
<td>ثُ</td>
<td>ثَ</td>
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<td>F</td>
<td>fa</td>
<td>fe</td>
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<td>fo</td>
<td>fu</td>
<td>قُ</td>
<td>قَ</td>
<td>قٌ</td>
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<tr>
<td>G</td>
<td>ga</td>
<td>ge</td>
<td>gi</td>
<td>go</td>
<td>gu</td>
<td>شُ</td>
<td>شَ</td>
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<td>H</td>
<td>ha</td>
<td>he</td>
<td>hi</td>
<td>ho</td>
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<td>سَ</td>
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<td>Etc</td>
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<td>cte</td>
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</tr>
</tbody>
</table>
If we swallow big chunks we find them harder to digest

Single letters are small chunks
Simple procedures

Whole words are bigger chunks
Learning one long chain
Chunking concept explains many educational failures

Without practice to combine small chunks, larger ones cannot be built.

Reading, math, driving a car.

If we get chunks that are too big for our experience, we cannot learn them.

Unless someone breaks them down for us.

E.g. a parent breaks them down at home for children.

Unless they happen to learn some alternate route.
Implications of working memory:
Fluency must be the goal of all training

We must do effortlessly, no time for searches:
- Reading
- Math calculations
- Vocationally related skills
- Gas chromatograph, computer operation, etc.

Chunks must start small, be learned gradually
If the small chunks are unknown, remediation is necessary
Our initial reading is halting, effortful, letter by letter

With practice reaction time to a letter drops to milliseconds

small chunks are build of 2-3 letters

Brain imaging shows activity in areas related to effortful decoding
A letter by letter reader may see just jumbles of letters, some incorrectly…

The good students study many hours
Practice “programs” the brain for automatic reading

Nerve “wiring” develops in children’s brains
The visual word form gets activated
The eye takes in 5 letters at once in about 250 msec.
The brain identifies entire words
Long and short words are read equally fast (silently)
each word or phrase becomes an item
Eventually speed rises to 250+ words per minute
Tolerance for ambiguity, scribbling, calligraphy
People can’t help but read
Attention to message rather than the print
Sufficient activation of the visual word form area

Speed increases then rather suddenly takes off
How do students sound when the visual word form area is activated?

Hear the students

Pratham NGO, 6 weeks course

Consistent pairing of sounds and letters
With 2 hours of daily practice children may pass from the off to on in 6 weeks (India)
Then students read fast enough to understand text

It seems that adults require much longer practice times than children to attain automaticity
Activation of the Visual Word Form area (VWFA) means that words are read like faces.

**Implications**
- Perceptual constancy
- See multiple features
- Yet see entire face
  - and not notice some details
- Eventually word pictures are built
Relationship between reading and comprehension
Ghana:
Early Grade Reading Assessment
Suggested fluency goal

Asian syllabic scripts

**Make students fluent in most common syllabic combinations by the end of grade 2**

45-60 words per minute on those combinations

Teach the rest later

- What features can be moved to grades 2 and 3?
  - Fluent readers may guess from context if they find those not already taught

Separate words or put them in frames until students can read them fast – recombine in grades 4-5
Phonological awareness exercises help map sounds to letters

Insight that words are made up of

Long sounds (syllables: tha –la, gaan) and short sounds (phonemes: th-a-l-a, g-aa-n).

Strong phonological skills help reading and spelling

Children not splitting words easily also have trouble recognizing words and spelling

Tone awareness also needed in tonal languages
The magic of automaticity

See for yourself
Eye tracking: One more method for studying automaticity

The eye movements of automatic vs. effortful reading

G. Zoccolotti, U. of Rome
Another sign of automaticity and activation of the face recognition area
Can you read the sentences below?

BASIC SKILLS  TEACHER PROFILE

STUDENT ACADEMIC COMMENTS
Brain imaging techniques (since about 1995)

Example:

Brain activation patterns of literates and illiterates
A specialized Electroencephalogram (Event-Related potentials - ERPs) can demonstrate the required activation level of the visual word form area. See the N1 electrode showing -3 millivolts 170 milliseconds after the wired person reads.
Functional Near-Infrared Spectroscopy
Phonics instruction changes both the performance and the brain (Simos et al., 2002),

Superior posterior temporal gyrus
Summary: How to attain reading fluency?

Fast reading, fluency, automaticity is critical for understand text

Explicit teaching and practice needed
  - Phonological awareness
  - Textbooks with sufficient practice material
  - Feedback
  - Practice time

To get ahead, students must become fluent very early, at least in common words and symbols

Reading programs of a few months can have big benefits

Implications for teacher training
Students becoming fluent late may always read slowly have limited comprehension

If they finally learn reading in grade 6

They may read 70 wpm in grade 8
They get no more books by grade 8

They will read little secondary school
university or teacher training colleges
They cannot read fast enough to consult sources

Or read volumes of text
At 110 words per minute, it takes 5 minutes per page
What does the research imply for teaching the east Asian scripts?
The scripts used in various countries

Roughly there are:

Letters (alphabetic)
Syllabic, each syllable one sign (hiragana)
Syllabic matrices, vowels combined with consonants
ideograms

The script types may need different treatment for efficient learning
Do the countries budget and prepare adequately?
Visual complexity affects automaticity

The more “more ink used to write a letter” the longer it takes to automatize a letter; therefore
Longer alphabets take longer
Similar letters need practice to separate
Irregular spelling needs more practice
Denser print is read more slowly
Khmer, Thai, others have all these features!

Was OK for a few monks, harder for Education for All
Dhivehi – possibly the simplest functioning alphabet in the world
children automatic by middle of grade 1

dh f m n sh h
dhaalu faafu meemu vaavu allfu kaafu lhaviyani baa raa noonu shaviyani haa
[ch] [j] [p] [y] [t] [z] [d] [s] [gn] [g] [l] [th]
[?] [o:] [o] [e:] [e] [u:] [u] [i:] [i] [a:] [a]

chaviyani javiyani paviyani yaa taviyani zaviyani daviyani seenu gnaviyani gaafu laamu thaa

sukun ooboafili obofili eybeyfili ebefili ooboofili ubufili eebeefili ibifili aabbaafili abafili
Exact spelling but much larger matrix with some pattern irregularities

More time needed to acquire automaticity, fluency
Latin script
Relatively low complexity of letters, survived Ancient Phoenician letters adapted into Greek, Latin
Original Script - Brahmi
written with a “small amount of ink”

ḷḷ ya [jə]  showModal letal ｌ la [lə] ｌ va [və]
Pallava inscriptions
decorative letters, more “ink”
7th century AD, Sra Kaeo in central Thailand
Pallava akshar -> Aksar Khmer
<table>
<thead>
<tr>
<th>letter</th>
<th>name &amp; meaning</th>
<th>transcription</th>
<th>letter</th>
<th>name &amp; meaning</th>
<th>transcription</th>
</tr>
</thead>
<tbody>
<tr>
<td>ก</td>
<td>กไก่ (chicken)</td>
<td>k/k [k/k]</td>
<td>น</td>
<td>ทหาร (soldier)</td>
<td>th/t [t/t]</td>
</tr>
<tr>
<td>ข</td>
<td>ข้อ (egg)</td>
<td>kh/k [kʰ/k]</td>
<td>ธ</td>
<td>ธง (flag)</td>
<td>th/t [t/t]</td>
</tr>
<tr>
<td>ฃ</td>
<td>ข้อ (bottle)</td>
<td>kh/k [kʰ/k]</td>
<td>ฑ</td>
<td>นุ่น (mouse)</td>
<td>n/n [n/n]</td>
</tr>
<tr>
<td>ค</td>
<td>ควาย (water buffalo)</td>
<td>kh/k [kʰ/k]</td>
<td>ป</td>
<td>ปลา (fish)</td>
<td>p/p [p/p]</td>
</tr>
<tr>
<td>ฅ</td>
<td>ฅ้ (person)</td>
<td>kh/k [kʰ/k]</td>
<td>ฑ</td>
<td>ปลา (fish)</td>
<td>p/p [p/p]</td>
</tr>
<tr>
<td>ฆ</td>
<td>ฆ่า (bell)</td>
<td>kh/k [kʰ/k]</td>
<td>ง</td>
<td>ฟ้า (lid)</td>
<td>f/- [f/-]</td>
</tr>
<tr>
<td>จ</td>
<td>จาน (plate)</td>
<td>ch/t [tʃ]</td>
<td>จ</td>
<td>ฟัน (tray)</td>
<td>ph/p [pʰ/p]</td>
</tr>
<tr>
<td>ฉ</td>
<td>ฉี่ (cymbals)</td>
<td>ch/- [ts/-]</td>
<td>ฉ</td>
<td>ฟัน (teeth)</td>
<td>f/p [f/p]</td>
</tr>
<tr>
<td>ช</td>
<td>ช้าง (elephant)</td>
<td>ch/t [tʃ/t]</td>
<td>ง</td>
<td>ล้านนา (sailboat)</td>
<td>ph/p [pʰ/p]</td>
</tr>
<tr>
<td>ซ</td>
<td>ซื้อ (chain)</td>
<td>s/t [s/t]</td>
<td>ม</td>
<td>ม้า (horse)</td>
<td>m/m [m/m]</td>
</tr>
<tr>
<td>ฌ</td>
<td>ฌา (bush)</td>
<td>ch/- [tʃ/-]</td>
<td>ญ</td>
<td>ยักษ์ (ogre)</td>
<td>y/y [j/j]</td>
</tr>
<tr>
<td>ญ</td>
<td>ญอง (woman)</td>
<td>y/n [j/n]</td>
<td>ร</td>
<td>เรือ (boat)</td>
<td>r/n [r/n]</td>
</tr>
<tr>
<td>ฎ</td>
<td>ฎา (headress)</td>
<td>d/t [d/t]</td>
<td>ล</td>
<td>ลิง (monkey)</td>
<td>l/n [l/n]</td>
</tr>
<tr>
<td>ฏ</td>
<td>ฏี (goad)</td>
<td>t/t [t/t]</td>
<td>ว</td>
<td>แหวน (ring)</td>
<td>w/w [w/w]</td>
</tr>
<tr>
<td>ฐ</td>
<td>ฐาน (base)</td>
<td>th/t [tʰ/t]</td>
<td>ส</td>
<td>ศาลา (pavilion)</td>
<td>s/t [s/t]</td>
</tr>
<tr>
<td>ฑ</td>
<td>ยาน (dancer)</td>
<td>th/t [tʰ/t]</td>
<td>ฑ</td>
<td>ฏี (goad)</td>
<td>t/t [t/t]</td>
</tr>
<tr>
<td>ฒ</td>
<td>ฒี (old person)</td>
<td>th/t [tʰ/t]</td>
<td>ฑ</td>
<td>สี (hermit)</td>
<td>s/t [s/t]</td>
</tr>
<tr>
<td>ฒ</td>
<td>ฒี (old person)</td>
<td>th/t [tʰ/t]</td>
<td>ธ</td>
<td>สี (hermit)</td>
<td>s/t [s/t]</td>
</tr>
<tr>
<td>ณ</td>
<td>ณ (novice monk)</td>
<td>n/n [n/n]</td>
<td>ผ</td>
<td>ฮิป (chest)</td>
<td>h/- [h/-]</td>
</tr>
<tr>
<td>ฎ</td>
<td>ฎี (child)</td>
<td>d/t [d/t]</td>
<td>ผ</td>
<td>ชุ่ม (kite)</td>
<td>l/n [l/n]</td>
</tr>
<tr>
<td>ฏ</td>
<td>ฏี (turtle)</td>
<td>t/t [t/t]</td>
<td>อ</td>
<td>อ่าง (basin)</td>
<td>o/- [o/-]</td>
</tr>
<tr>
<td>ฐ</td>
<td>ฐั่ง (sack)</td>
<td>th/t [tʰ/t]</td>
<td>ฐ</td>
<td>ฮีน (owl)</td>
<td>h/- [h/-]</td>
</tr>
<tr>
<td>ฑ</td>
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<td>h/- [h/-]</td>
</tr>
</tbody>
</table>
Lao: a simplified script
Khmer – patterns of ancient Indian scripts

To read vowels, students must know the ‘series’ that consonants belong to

Devanagari (Sanskrit, Hindi, Nepali)

Khmer
Bengali vs. Khmer “subscript” consonants: An additional alphabet!

क का झ झा झ्न झ्म झ्मा झ्म्र झ्य झ्या झ्य्न
ख खा ख्न ख्म ख्मा ख्म्र ख्य ख्या ख्य्न
ग गा ग्न ग्म ग्मा ग्म्र ग्य ग्या ग्य्न
ग्या ग्य्य ग्य्या
व वा व्न व्म व्मा व्म्र व्य व्या व्य्न
श शा श्न श्म श्मा श्मर श्य श्या श्य्न
ष षा ष्न
ह हा ह्न
ड डा ड्न ड्म
ढ ढा ढ्न ढ्म
च चा च्न च्म
छ छा छ्न छ्म
ज जा ज्न ज्म
झ झा झ झ्न झ्म झ्मा झ्म्र झ्य झ्या
ञ ञा ञ
ट टा ट्न
ठ ठा ठ्न
ड डा ड्न
ढ ढा ढ
च चा च
छ छा
ज जा
झ झा
ञ ञा
ट टा
ठ ठा
Kannada – high error rates
complex forms, multiple visual patterns

Vowel diacritics

Half-consonant combinations
and vowel combinations result in a
matrix of about 300 characters
that must be automatized

Some are unpredicatable
Complex shapes written with longer ink trail:
Students of other syllabic scripts face the same difficulties

<table>
<thead>
<tr>
<th>Bengali</th>
<th>Sinhala</th>
<th>Lao</th>
<th>Khmer</th>
<th>Latin</th>
</tr>
</thead>
<tbody>
<tr>
<td>কো</td>
<td>օհ</td>
<td>(տ)</td>
<td>թ</td>
<td>ko</td>
</tr>
<tr>
<td>কোঝ</td>
<td>օհ</td>
<td>(տ)</td>
<td>թ</td>
<td>Koh (kuoh)</td>
</tr>
<tr>
<td>কৌ</td>
<td>օհ</td>
<td>(տ)</td>
<td>թ</td>
<td>kau</td>
</tr>
</tbody>
</table>
Cambodia: Grade 1 textbook -2010 letters taken out of the matrix, presented at random very little practice per letter, few pages
Cambodia: 33 consonants X 24 vowels
Fluency in the matrix characters must come before meaning!
This method asked Cambodian students to learn identification of entire words before they had learned the syllabic combinations.
India- Pratham NGO – Practice needed
Matching the syllabic symbols to text
Thai, Lao, Khmer connected words slow reading down

Dense print slows down speed
In milliseconds students must find out where words end
Research: Separation may speed up automaticity and reading of adults
Words are relatively clear in people’s minds.
Spacing is rather arbitrary, combinations frequent in ancient languages.

Khmer words in language instruction textbooks for foreigners.

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. យល់ស្មើបក់ស្លៅ-អ្នុំ លុញ.</td>
<td>បាយ, លុញ ក្រែត.  [book should be open]</td>
</tr>
<tr>
<td>2. look kheen tumpoa ti-ñey tey? (baat)</td>
<td>baat, kheen haey.</td>
</tr>
<tr>
<td>3. look kheen khlia ti-muoy tey? (baat)</td>
<td>baat, kheen haey.</td>
</tr>
<tr>
<td>4. look kheen bontot ti-ñiy tey? (baat)</td>
<td>baat, kheen haey.</td>
</tr>
<tr>
<td>5. bontot niŋ meel thaa me?</td>
<td>bontot niŋ meel thaa: khnom sdap baan.</td>
</tr>
<tr>
<td>(khnom sdap baan)</td>
<td></td>
</tr>
<tr>
<td>6. soum thaa taam khnom: khnom sdap baan.</td>
<td>khnom sdap baan.</td>
</tr>
<tr>
<td>7. khlia niŋ, look yul tey? (baat)</td>
<td>baat, yul haey.</td>
</tr>
<tr>
<td>8. soum thaa medcoon tiet, khlia dodael.</td>
<td>khnom sdap baan.</td>
</tr>
<tr>
<td>12. yleuw thaa khlia têñ-oh nhu medcoon tiet.</td>
<td>khnom sdap baan.</td>
</tr>
<tr>
<td>13. thaa khlia dodael, kom thaa pia?</td>
<td>sdap baan.</td>
</tr>
</tbody>
</table>
Grade 1 textbooks could have larger and more spacious also separated letters.

Tonight my friends and I want to go eat Cambodian food. Do you want to go too?

jaa, kñom jong dtōn. yēyŋ juab knia maong bpon-maan?

lāŋ dēt kñom maong bpon-maan.

Yes, I would like to go. What time are we going to meet?

aak juab nēn pdteah kñom maong bpram-muay baan dtee?

Can you meet at my house at 6:00?

baan. kñom aak juab bōoŋ nēn maong bpram-muay baan.

That’s fine. I’ll meet you at 6:00.

baat. cō-gun. jēm-riab-lia.
Lao
Letters in the periphery of the eye not seen clearly
Separation may speed up automaticity

'Take only good paper.'
Laos: some continuous writing is broken up into words
Instructional implications for syllabic scripts

Teach 1-2 combinations a day if possible
Use the traditional chants, they work with the mind through the ages
Start with most frequent consonants if possible
Include nonsense syllables practice
Phonological awareness, tone awareness
Individual practice
Much writing practice to automatize shapes
Comprehension comes later
How is instructional time used in schools?

Some examples from east Asia
Challenge: Instructional time poorly used in many countries

Class time as allotted by a government (e.g., 200 days, 1000 teaching hours)

Remaining after school closures (strikes, weather, teacher training, extra holidays)

Remaining after teacher absenteeism and tardiness

Remaining after student absenteeism

Class time devoted to any learning task

Learning time relevant to curriculum
Students waiting for the bell to ring rather than working
How efficiently is time used in some schools?

Insights from various classroom observations for reading and other subjects
When there are no textbooks, process rewards the better students.
Teacher performance in low-income areas

Presented letters and rules
  This is significant work
Interacted with those able to perform, neglected rest without individual feedback only a minority learned

Teaches and directors unconcerned about students who did not know
  Situation perceived as “normal”
Attributions: minority, poor, illiterate parents
Children easily branded “slow learners” but they still did math
Teacher training can improve

Need to standardize the recitation method

When are teachers supposed to do what?

Brief scripted lessons rather than general guidelines

Very specific teacher training videos

Teachers need to be accountable for performance, not just delivery

Independent practice with teacher reading with student even 30 seconds per day
Suggestions for achieving reading for (nearly) All

- Facilitate visual issues
- Improved phonological awareness exercises
- More practice in textbooks (mentioned earlier)
- Need to standardize the recitation method
  
  When are teachers supposed to do what?

- Brief scripted lessons rather than general guidelines
- Precise teacher training videos
- Independent practice with teacher reading with student even
  30 seconds per day
- Carry out a remediation campaign to catch the older illiterate
  students
Measuring reading fluency

Early grade Reading Assessment
EGRA Instrument Components
initially for English speaking dyslexia screening

1. Engagement/Relationship to Print
2. Letter Naming, letter sounds  KEEP
3. Phoneme Segmentation
4. Familiar Word Reading  MAYBE KEEP
5. Nonsense Word Decoding
6. Paragraph Reading and Comprehension Questions  KEEP
7. Listening Comprehension  minority languages
8. Dictation  MAYBE KEEP

Possible harder passage for advanced grades
A stop watch or “egg timer” is needed
How is EGRA administered?

Individual Oral Assessment, ~17 min per child, with context questionnaire

Same test for first few grades (ceiling/floor issues)

4 Main phases to baseline EGRA application

1. Adaptation and Pre-testing: 1 week workshop
2. Training: 1-2 weeks, intensive practice with stopwatches
3. Data Collection: Sample of about 30 schools per group of interest (15-20 students per grade)
4. Analysis and Feedback with local counterparts
## EGRA Budget – Solomon Islands

### Table: EGRA Budget

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Cost in TOP</th>
<th>Cost in USD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Opening workshop</td>
<td>$ 4,954.00</td>
<td>$ 2,752.22</td>
</tr>
<tr>
<td></td>
<td>Development of EGRA instrument</td>
<td>$ 1,500.00</td>
<td>$ 833.33</td>
</tr>
<tr>
<td></td>
<td>Training (equipment and resources)</td>
<td>$ 3,904.00</td>
<td>$ 2,168.89</td>
</tr>
<tr>
<td></td>
<td>Training (transport and travel allowances for enumerators)</td>
<td>$ 11,406.00</td>
<td>$ 6,336.67</td>
</tr>
<tr>
<td></td>
<td>Fieldwork activities (staff fees)</td>
<td>$ 8,060.00</td>
<td>$ 4,477.78</td>
</tr>
<tr>
<td></td>
<td>Fieldwork activities (equipment and resources)</td>
<td>$ 7,701.00</td>
<td>$ 4,278.33</td>
</tr>
<tr>
<td></td>
<td>Fieldwork activities (transport)</td>
<td>$ 12,694.00</td>
<td>$ 7,052.22</td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data entry and validation</td>
<td>$ 14,500.00</td>
<td>$ 8,055.56</td>
</tr>
<tr>
<td><strong>Data Entry</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Analysis and Reporting</strong></td>
<td>Travel (International consultant)</td>
<td>n/a</td>
<td>$ 12,500.00</td>
</tr>
<tr>
<td></td>
<td>Travel expenses (training and fieldwork)</td>
<td>n/a</td>
<td>$ 10,000.00</td>
</tr>
<tr>
<td></td>
<td>Training/Fieldwork and Analysis (consultant fees)</td>
<td>n/a</td>
<td>$ 17,100.00</td>
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</tbody>
</table>

**Subtotal: Local Costs** $ 35,955.00

**Subtotal: International TA and Travel Costs** $ 39,600.00

**TOTAL (USD)** $ 75,555.00
Some sampling designs used

<table>
<thead>
<tr>
<th>Country</th>
<th>Language</th>
<th>Grades</th>
<th>Schools</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Gambia</td>
<td>English</td>
<td>1-3</td>
<td>40</td>
<td>1200</td>
</tr>
<tr>
<td>Senegal</td>
<td>French</td>
<td>1-3</td>
<td>36</td>
<td>501</td>
</tr>
<tr>
<td></td>
<td>Wolof</td>
<td>1, 3</td>
<td>36</td>
<td>186</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>Spanish</td>
<td>1-3</td>
<td>41</td>
<td>1924</td>
</tr>
<tr>
<td></td>
<td>Miskitu</td>
<td>1-3</td>
<td>6</td>
<td>282</td>
</tr>
</tbody>
</table>
Good Morning. My name is Joseph. I am seven years old. My brother is Musa. He is five years old. I also have a sister. Her name is Mary. We live in Accra. We go to school from Monday to Friday. We like to read. My father is a farmer. My mother sells fish at the market near the tree.
a) Where does Joseph live? [Accra]
   Correct    Incorrect

b) What is Joseph’s brother’s name? [Musa]
   Correct    Incorrect

c) How many children are in Joseph’s family? [3]
   Correct    Incorrect

d) What do Joseph and his brother and sister like to do? [To Read]
   Correct    Incorrect

e) What does Joseph’s mother do? [Sells fish/Sells at market/Sell]
   Correct    Incorrect
Cambodia
Very preliminary EGRA results

Grades 1-6, March testing
In 2010 42% could read no text
Chet Chhem recitation method was introduced
In 2012 only 22% could read no text
The % of illiterate students was roughly cut in half.
Approaching the 83% criterion

  serving students – 1 standard deviation below mean

The relationship between fluency and comprehension seems very close in Cambodia as in other countries
There was a rabbit that have not had anything to eat for a long time. It was so hungry and was looking forward for food everywhere. Suddenly it met a banana farm that had lots of ripe bananas. It wanted to climb up banana tree, but it could not. After that, it tried to shake the banana tree but the banana did not drop. At the end, it picked up a stone and through it toward banana but the stone hit to a monkey head. Suddenly the monkey was angry and catch banana through it back to the rabbit. The rabbit picked up banana and ate deliciously.
<table>
<thead>
<tr>
<th>គ្រប់គ្រង /words</th>
<th>ស្លី /consonants</th>
</tr>
</thead>
<tbody>
<tr>
<td>១០</td>
<td>៣២</td>
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<td>៨៦</td>
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<td>៩៩</td>
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<td>១០០</td>
</tr>
</tbody>
</table>
The error rates on the various phanyangsan and sara can be plotted.
Policy focus: Parsimony

Need for reading instructional and assessment methods that can do just what is needed
Sequences and routines little-educated teachers can do easily
Materials that are cheap, black and white actually teach reading
Coaching
Simple scripted lessons
Thank you for your time!