EdData II
Education Data for Decision Making

Policy Dialogue on Early Grade Reading and Mathematics in Zambia

November 2011

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About the Presentation

- This presentation was prepared for a policy dialogue workshop held November 21-22, 2011, in Lusaka, Zambia. The workshop was organized by Dr. Ash Hartwell and RTI International EdData II project staff for USAID/Zambia and the Ministry of Education.
- The USAID EdData II project is led by RTI International. The effort described in this presentation was carried out under EdData II Task Order Number 7, EHC-E-07-04-00004-00.

Part 1 – Policy Context and Purpose of the SSME Study

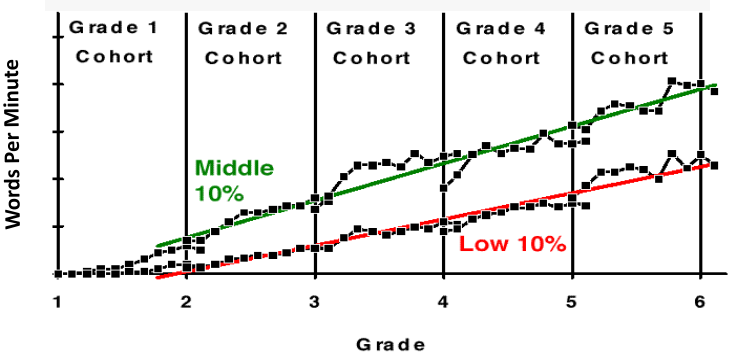
Purpose and Objectives of the Workshop

- Examine the findings of the Snapshot of School Management Effectiveness (SSME) and the results of the Early Grade Reading and Early Grade Mathematics Assessments (EGRA and EGMA)
- Identify key factors that contribute to students' performance
- Explore policy and programme implications of these findings
- Consider next steps for policy, programmes and research

Why Early Grade Literacy Matters

What do you think?

Reading Trajectories of Low and Middle Readers, Grades 1–6



Children below a certain level by the end of grade 1 stay behind forever, <u>and the gap widens</u>. If they cannot read, they fall behind in everything else.

Good, Simmons, & Smith (1998)

Why Early Grade Literacy Matters

"Research has shown that early grade reading competency is critical for continued retention and success in future grades. This link is especially relevant for low-income children, because they tend to have home and school environments that are less conducive to early reading development relative to those of higher income children (Patrinos & Velez, 2009).

"Studies have shown that learning outcomes have a direct correlation to a country's economic growth. A 10% increase in the share of students reaching basic literacy translates into a 0.3 percentage point higher annual growth rate for that country (Hanushek & Woessmann, 2008).

"Children who do not attain reading skills at the primary level are on a lifetime trajectory of limited educational progress and therefore limited economic and developmental opportunity."

Quoted from USAID (2011)

Why Early Grade Literacy Matters

In 2006, governments and development agencies awoke to the reality that Education for All (EFA) was not the same as learning for all.

In that year, evaluations and policy papers from UNESCO, the World Bank, the Center for Global Development, and USAID indicated that the rapid expansion of access to basic schooling, celebrated as a success for EFA and the Millennium Development Goals (MDGs), was not matched by increasing learning outcomes.

Rather, even in those countries on track to meet the MDG of primary school completion, the great majority of youth were not meeting even *minimum* reading objectives, much less the competencies demanded by a rapidly globalizing economy (Abadzi et al., 2005; Filmer et al., 2006; World Bank, 2006).

ZAMBIA – Policy, Programmes and Experience with Early Grade Literacy

A panel to review:

- Zambia's policy on early grade literacy
- Early grade literacy programmes – approach and evaluations
- Current status: National Sector Development Plan implementation and expectations

Snapshot of School Management Effectiveness (SSME): Design & Methodology

SSME provides a quick but rigorous picture of school management, pedagogic practice and learning outcomes in reading and mathematics for lower grades in primary school.

It collects information through interviews with the Head Teacher, teacher, student, and parents, and from school and classroom observations on:

- school infrastructure, instructional materials, teacher and Head Teacher characteristics, parental and community involvement;
- classroom teaching and learning processes, including use of material, instructional content, student–teacher interaction, time on task, assessment techniques, and administrative oversight; and
- learning outcomes data, via the application of core portions of two other instruments: the Early Grade Reading Assessment and Early Grade Mathematics Assessment.

SSME: Design and Methodology

- The data are representative due to a rigorous process of randomized selection of districts, schools, classes and students.
- The instruments are administered at a school in a single day by a four-person team.
- The SSME was administered halfway through the school year, in July 2011, in four provinces, 16 districts, 40 schools, 80 classes, with 800 students in grades 2 and 3.

Sources

Abadzi, H., Crouch, L., Echegaray, M., Pasco, C., & Sampe, J. (2005). Monitoring basic skills acquisition through rapid learning assessments: a case study from Peru. *Prospects,* 35(2), 137–156.

Filmer, D., Hasan, A., & Pritchett, L. (2006). *A millennium learning goal: Measuring real progress in education*. Center for Global Development, Working Paper 97. Washington, DC: Center for Global Development. http://www.cgdev.org/files/9815_file_WP97.pdf

Good, R. H., Simmons, D. C., & Smith, S. (1998). Effective academic intervention in the United States: Evaluating and enhancing the acquisition of early reading skills. *School Psychology Review, 27, 45–56.*

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World Bank. (2006). *From schooling access to learning outcomes. An unfinished agenda: An evaluation of World Bank support to primary education*. Washington DC: World Bank and Independent Evaluation Group.

Part 2 – Snapshot of School Management Effectiveness (SSME)

1

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SSME: School and Class Profiles

Sample

- Regions
- Schools/Head Teacher, classes/teachers, parents, and students
- Regions, districts, students by gender and grade (2 and 3)

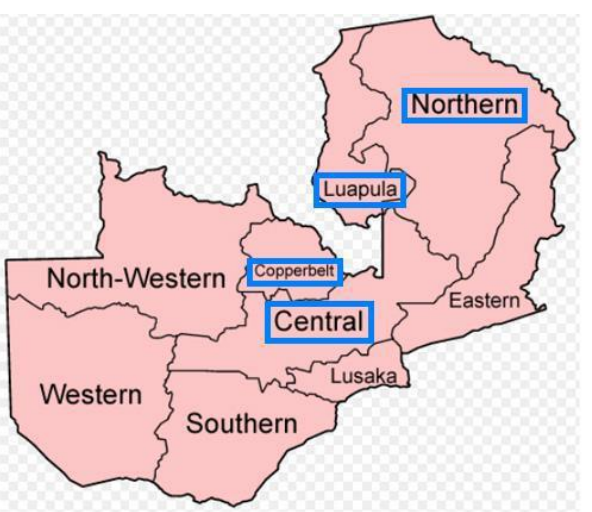
SSME 1 – Schools, Classes, Students, Parents

- School infrastructure
- Head Teacher and teacher qualifications and training
- Enrolments and class sizes
- Instructional materials: Availability and usage
- Teaching and learning processes
- Assessments of students and teachers
- Community and parent-teacher association (PTA)
- Time on task (reading)

HOW DO THESE FACTORS INFLUENCE STUDENT LEARNING OUTCOMES?

3

Provinces Selected for Assessment



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Random Sampling: Schools, Classes, Parents and Students

Unit	No. in Sample
Schools and Head Teachers	**40**
Classrooms and Teachers	**80**
Parents	**80**
Students	**800**

Region	Districts	Boys	Girls	Grade 2	Grade 3
Central	3	106	94	100	100
Copperbelt	5	99	101	100	100
Luapula	4	107	93	100	100
Northern	4	100	100	100	100
Total	**16**	**412**	**388**	**400**	**400**

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Student Characteristics

- On average, 72% of students spoke Bemba at home. Proportions of students whose native tongue was Bemba varied:
  - Luapula – 96%
  - Northern – 78%
  - Copperbelt – 63%
  - Central – 60%.
- The average age for students in grade 2 was 9 years, and in grade 3 it was 10 years.
- 4% of students reported that they were repeaters.
- 35% of the students reported attending preschool.

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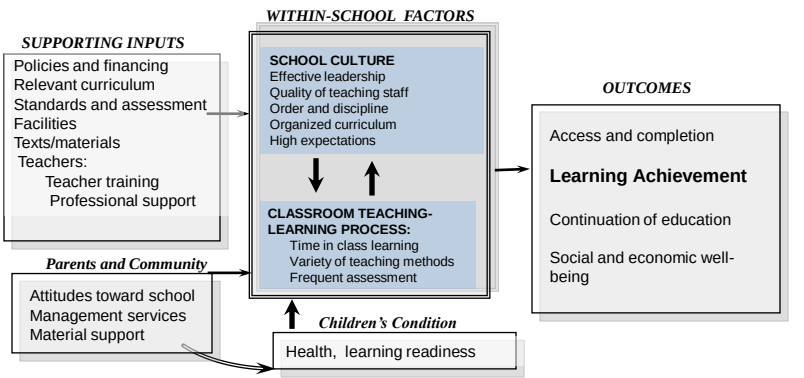
Factors Linked to School Effectiveness



Based on research reported by Heneveld & Craig (1996) and Carasco et al. (1996)

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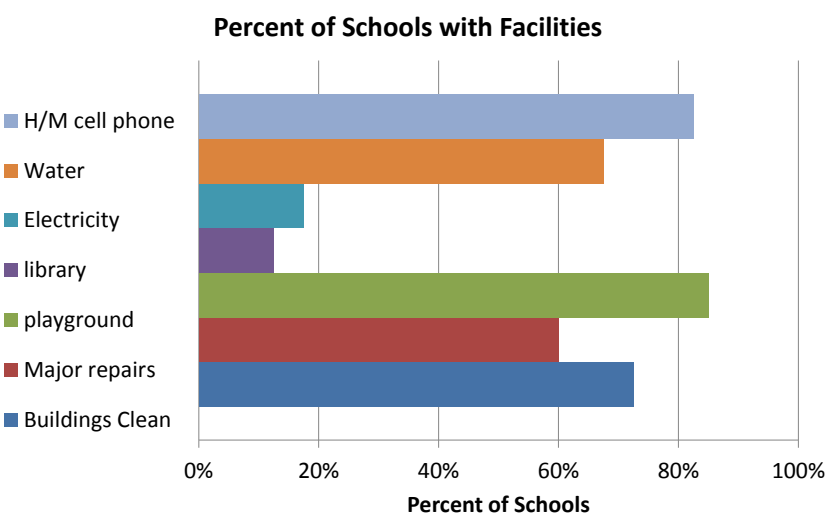
School Infrastructure



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Class Size: Student–Teacher Ratio

- In the evaluated classrooms, the average student-teacher ratio was 53.
- In 40% of schools, the student–teacher ratio was greater than 50. Head Teachers reported a range of student–teacher ratios, from 22 to 179.
- Most schools had multiple shifts, with shift times from 3.5 to 4 hours.
- 29% of evaluated classrooms were multi-grade classrooms.

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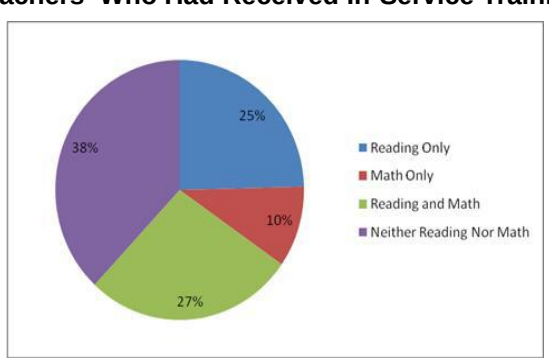
Teacher Qualifications and Training

Among Head Teachers, 56% reported that their highest level of qualification was a diploma and 29% reported a teaching certificate. Among teachers, 66% reported that their highest level of qualification was secondary school; all but 2 teachers (97%) had completed teacher training.

Teachers Who Had Received In-Service Training



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Distribution of Books to Schools and Classes

- In the majority of classrooms (51% in language and 49% in mathematics), fewer than 10% of the students had textbooks.
- Fewer than 7% of the classrooms had textbooks for more than 75% of the students.
- Only 12% of classrooms had enough textbooks for half or more of the students.
- Head Teacher reports indicated that only 8% of the schools had received the appropriate number of textbooks for their students at the start, or during, the last school year.
- 63% of the classrooms had no books other than textbooks.

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Instructional Materials in Classrooms

Instructional Materials Available

Language Books per Student	Student Exercise Book: Language	Teacher Guide: Language	Math Books per Student	Student Exercise Book: Maths	Teacher Guide: Maths
20%	60%	57%	23%	80%	55%

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Instructional Materials in Classrooms

Use of Instructional Materials

Class Time Used	Blackboard	Textbook	Other Books	Student Exercise Book
More than ½ class time	73%	30%		5%
Less than ½ class time	24%	42%	5%	45%
Not used	3%	28%	95%	50%

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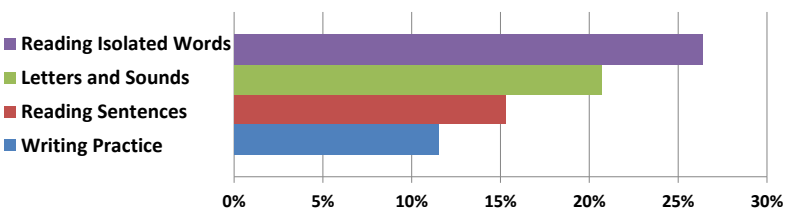
Lesson Content and Activities

Bemba Language Classes



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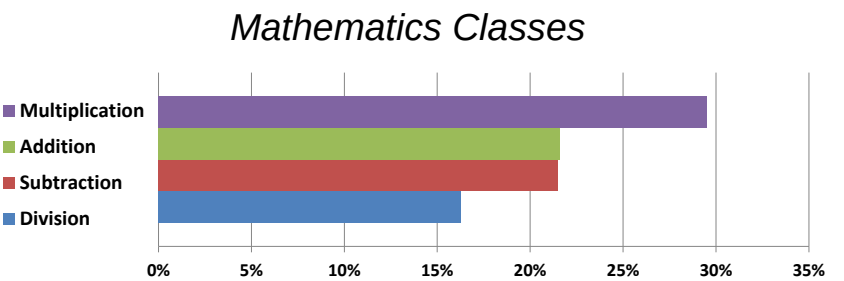
Lesson Content and Activities



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Assessments and Feedback

Teacher Comments in Student Exercise Books	% Observed*
None	12%
A few pages	52%
Most pages	21%
All pages	14%

*Half of the students assessed did not have exercise books on the day of the visit so these figures represent only those with their books.

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Assessments and Feedback

Head Teacher Evaluation of Students	% Reported
End-of-term evaluation	59%
Monitoring of tests given by teachers	49%
Teacher progress reports	44%
Review of students' work	27%
Classroom observation	12%

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Parents' Role in Supporting Students

Report from…	Type of Support	%
Students	Parent(s) help with homework	48%
Teachers	Some parents review student homework	63%
Students	Parent(s) are aware when they receive good marks	78%
Students	Parent(s) celebrate students' good marks	66%
Head Teachers	Satisfied with parents' involvement	31%
Teachers	Satisfied with parents' involvement	21%
Parents	Read stories to children a number of times each week	12%

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Community Role: PTA Activities

All Zambian schools have a PTA. Head Teachers reported fairly active PTAs:

- 67.5% of Head Teachers reported that the PTAs meet every 2–3 months.
- 27.8% reported that PTAs meet monthly.
- Head Teachers reported that PTAs engaged in a number of activities, from reviewing school improvement efforts to discussing student problems and solutions.

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Time for Reading Instruction and Practice

	Official	Observed	Total Annual Instructional Hours: Reading
School days	190	187	
Length of school day (hrs)	4hr 40m	3 hr30m	655
Periods for Bemba reading	8/35wk	1hr4m day	150
Teacher absences (reported by HT)		11%	133
Pupils absences (observed)		26%	98
Class management time		8.5%	**90**

Note: These data do not indicate how effectively these 90 hours are used to teach and practice reading. Research indicates that a minimum of 250 hours of focused instruction and practice are needed to achieve reading fluency (Comings, 1995).

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Findings from Reading Assessment (EGRA) and Mathematics Assessment (EGMA)

Questions to ask:

- Are these findings surprising? Why?
- What are key factors contributing to the results?

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Summary of Assessments

Reading Assessments

1. Letter Sounds
2. Unfamiliar Words
3. Oral Reading Fluency
4. Reading Comprehension
5. Listening Comprehension

Mathematics Assessments

1. Number Identification
2. Quantity Comparison
3. Missing Number (number patterns)
4. Addition
5. Subtraction

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Students Reading Letter Sounds—Instructions

Show the child the sheet of letters in the student stimuli booklet. Say:

Here is a page full of letters of the alphabet. Please tell me the NAMES of as many letters as you can-- not the SOUNDS of the letters, but the names.

For example, the name of this letter *[point to A]* **is "A"**

Let's practise: tell me the name of this letter *[point to V]***:**

If the child responds correctly say: **Good, the name of this letter is "VEE."**

If the child does not respond correctly, say: **The name of this letter is "VEE."**

Now try another one: tell me the name of this letter *[point to L]***:**

If the child responds correctly say: **Good, the name of this letter is "ELL."**

If the child does not respond correctly, say: **The name of this letter is "ELL."**

Do you understand what you are to do?

When I say "Begin," please name the letters as quickly and carefully as you can. Start here and continue this way. *[Point to the first letter on the row after the example and draw your finger across the first line].* **If you come to a letter you do not know, I will tell it to you. Otherwise I will keep quiet & listen to you. Ready? Begin.**

Start the timer when the child reads the first letter. Follow along with your pencil and ***clearly*** *mark any incorrect letters with a slash (/). Count self-corrections as correct. If you've already marked the self-corrected letter as incorrect, circle the letter and go on.* ***Stay quiet,*** *except when providing answers as follows: if the child hesitates for 3 seconds, provide the name of the letter, point to the next letter and say "****Please go on****." Mark the letter you provide to the child as incorrect. If the student gives you the letter sound, rather than the name, provide the letter name and say: ["****Please tell me the NAME of the letter****"]. This prompt may be given only once during the exercise.*

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Students Reading Letter Sounds

AFTER 60 SECONDS SAY, "stop." Mark the final letter read with a bracket (⌋).

Early stop rule: *If the child does not give a single correct response on the first line, say "****Thank you!****", discontinue this exercise, check the box at the bottom, and go on to the next exercise.*

Example : A v L

1	2	3	4	5	6	7	8	9	10	
L	i	h	R	S	y	E	O	n	T	*(10)*
i	e	T	D	A	t	a	d	e	w	*(20)*
h	O	e	m	U	r	L	G	R	u	*(30)*
g	R	B	E	i	f	m	t	s	r	*(40)*
S	T	C	N	p	A	F	c	a	E	*(50)*
y	s	Q	A	M	C	O	t	n	P	*(60)*
e	A	e	s	O	F	h	u	A	t	*(70)*
R	q	H	b	S	i	g	m	i	L	*(80)*
L	i	N	O	e	o	E	r	p	X	*(90)*
N	A	c	D	d	I	O	j	e	n	*(100)*

Time remaining on stopwatch at completion (number of SECONDS) : ☐

Check this box if the exercise was discontinued because the child had no correct answers in the first line. ☐

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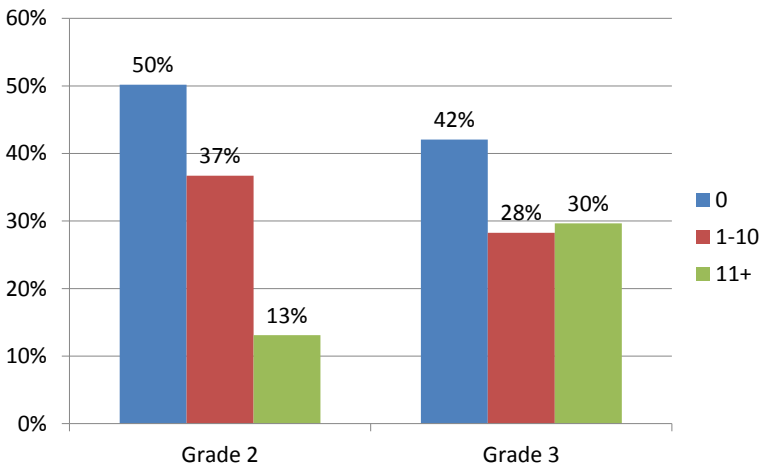
Students Reading Letter Sounds

Percentage of students reading 0, 1–10, and 11+ correct letter sounds per minute in grades 2 and 3



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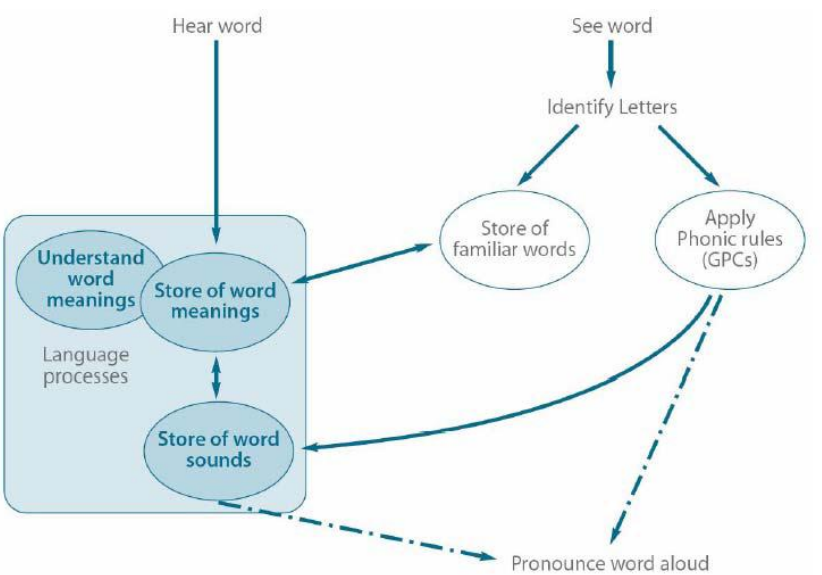
Word Recognition Process



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Reading Unfamiliar Words—Instructions

Show the child the sheet of invented words in the student stimuli booklet. Say,

Here are some made-up words. I would like you to read as many as you can. Do not spell the words, but read them. For example, this made-up word is: "ut".

Let's practise: please read this word *[point to the next word:* **dif** *].*
[If the student says "dif", say]: **"Very good: "dif"**
[If the student does not say "dif" correctly say]: **This made-up word is "dif."**

Now try another one: please read this word *[point to the next word:* **mab** *].*
[If the student says "mab", say]: **"Very good: "mab"**
[If the student does not say "mab" correctly say]: **This made-up word is "mab."**

When I say "begin," read the words as quickly and carefully as you can. Read the words across the page, starting at the first row below the line. I will keep quiet and listen to you, unless you need help. Do you understand what you are to do? Ready? Begin.

Start the timer when the child reads the first word. Follow along with your pencil and clearly mark any incorrect words with a slash (/). Count self-corrections as correct. If you've already marked the self-corrected letter as incorrect, circle the letter and go on. ***Stay quiet,*** *except when providing answers as follows: if the child hesitates for 3 seconds, provide the word, point to the next word and say "***Please go on***." Mark the word you provide to the child as incorrect.*

AFTER 60 SECONDS, SAY "Stop." Mark the final word read with a bracket ( ]).
Early stop rule: *If you have slashed/marked as incorrect all of the answers on the first line, say "***Thank you!***", discontinue this exercise, check the box at the bottom, and go on to the next exercise.*

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Reading Unfamiliar Words

Example : ut dif mab

1	2	3	4	5	
fut	lus	dit	leb	gak	(5)
huz	jod	kib	lek	tob	(10)
nom	rop	hig	reg	san	(15)
tup	ral	wix	nep	nad	(20)
lut	yod	sim	tat	sig	(25)
en	mon	nup	sen	kad	(30)
taw	lew	paf	sal	zuv	(35)
ved	kag	vom	riz	gof	(40)
maz	kol	ver	et	beb	(45)
tib	lef	yag	lim	dov	(50)

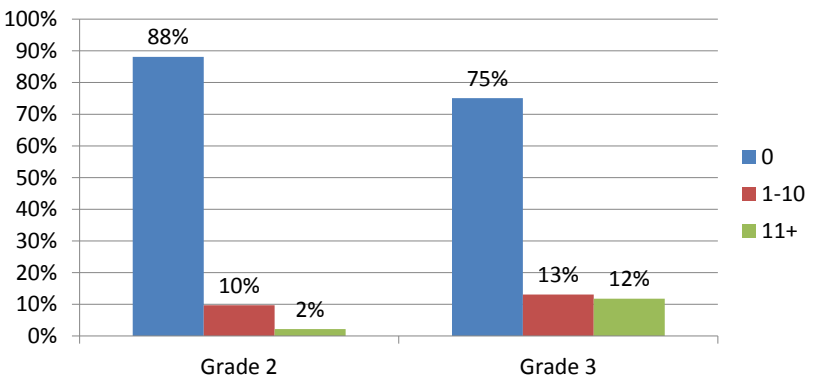
Time remaining on stopwatch at completion (number of SECONDS) : ☐

Check this box if the exercise was discontinued because the child had no correct answers in the first line. ☐

28

Reading Unfamiliar Words

Percentage of students reading 0, 1–10, and 11+ unfamiliar words per minute in grades 2 and 3



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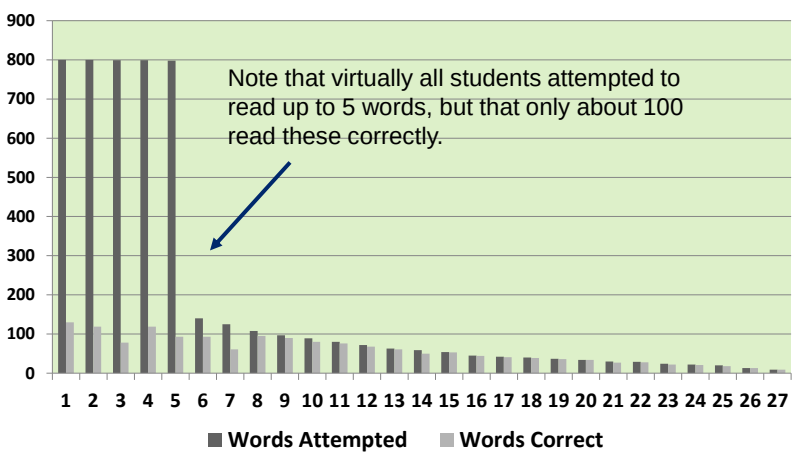
Reading Unfamiliar Words

Number of students attempting to read each unfamiliar word and the number who read each word correctly



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Oral Reading Fluency and Comprehension

Show the child the story on the last page of the student form. Say,

Here is a short story. I want you to read it aloud. When you have finished, I will ask you some questions about what you have read. Do you understand what you are to do? When I say "begin," read the story as quickly and carefully as you can. I will keep quiet and listen to you, unless you need help. Ready? Begin.

Start the timer when the child reads the first word. Follow along with your pencil and clearly mark any incorrect words with a slash (/). Count self-corrections as correct. ***Stay quiet,*** *unless the child hesitates for 3 seconds, in which case provide the word, point to the next word and say "**Please go on**." Mark the word you provide to the child as incorrect.*

At 60 seconds, say "Stop." Mark the final word read with a bracket ( ]).

Early stop rule: *If the child gives no correct answers on the first line, say "**Thank you!**", discontinue this exercise, check the box at the bottom of the page, and go on to the next exercise.*

When 60 seconds are up or if the child finishes reading the passage in less than 60 seconds, ***REMOVE the passage from in front of the child****, and ask the first question below. Give the child at most 15 seconds to answer the question, mark the child's response, and move to the next question. Read the questions for each line up to the bracket showing where the child stopped reading.*

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Oral Reading Fluency and Comprehension: Sample Story

		Now I am going to ask you a few questions about the story you just read. Try to answer the questions as best as you can.			
			Correct	Incorrect	No Response
My name is Pat. I live on a farm with my mother, father and brother Sam.	16	How many people are in Pat's family? [four; mother, father, Sam, Pat]			
My family is happy. One day Sam planted seeds with father. A snake bit him!	31	Sam's family was happy, then something happened. What was it? [a snake bit Sam]			
Mother knew what to do. She put wet cloths and leaves on his leg.	45	Where did the snake bite Sam? [leg] How did Sam get well? [his mother helped him; put wet cloths and leaves on his leg			
The next day, Sam was back in the field with father. We were happy again.	60	Was made the family happy again? [Sam was healed] What do you think happened to the snake? [ran off; Pat or father killed it; or any reasonable answer.]			

Time remaining on stopwatch at completion (number of SECONDS) : ☐

Check this box if the exercise was discontinued because the child had no correct answers in the first line. ☐

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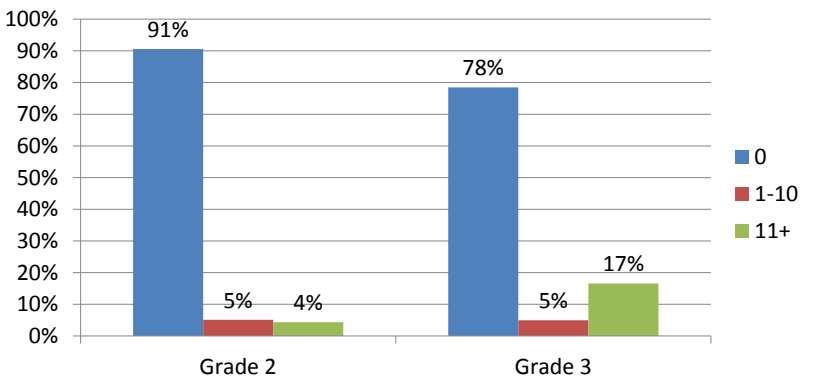
Oral Reading Fluency

Percentage of students reading 0, 1–10, and 11+ words of text per minute in grades 2 and 3



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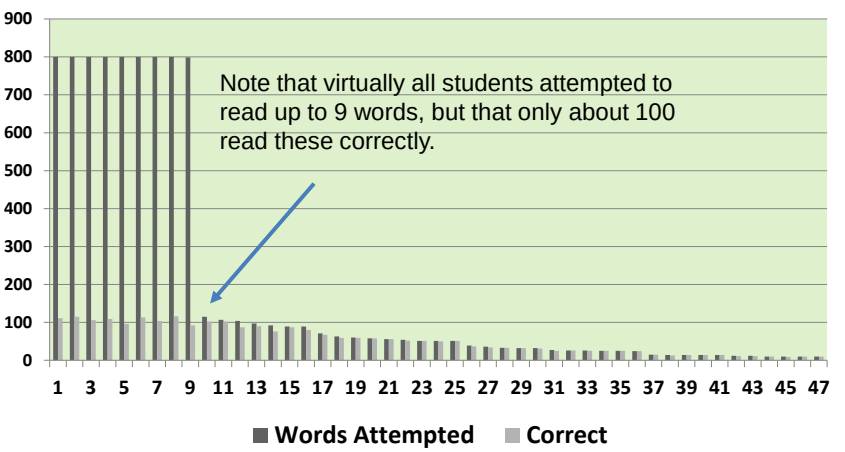
Oral Reading Fluency

Number of students attempting to read each word in the story, and the number who read each word correctly



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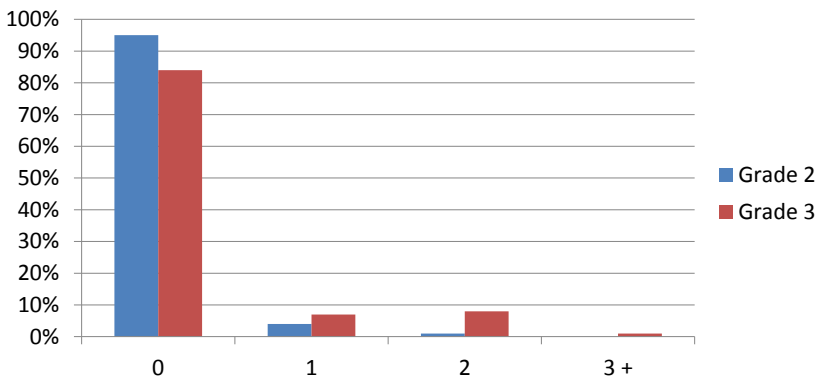
Reading Comprehension:
Number of Questions Answered Out of 5

NOTE: Only 110 pupils out of 800 attempted any questions

Percentage of students obtaining reading comprehension scores of 0, 1, 2, and 3+ in grades 2 and 3



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Listening Comprehension—Instructions

This is NOT a timed exercise and ***THERE IS NO STUDENT SHEET.*** *Read the following passage aloud to the child* ***ONLY ONE TIME****, slowly (about 1 word per second). Say,*

I am going to read you a short story aloud ONCE and then ask you some questions. Please listen carefully and answer the questions as best as you can. Do you understand what you are to do?

The gray duckling fell in the mud. "Help me," she cried. A green frog came to help, but he fell in too. "What now?" asked the frog. "I see something that leads to land!" the duckling replied. They both climbed on the log. "We are saved!" they shouted.

What is a duckling?	[duck; little duck]	○ Correct	○ Incorrect	○ No Response
Who fell in the mud last?	[frog]	○ Correct	○ Incorrect	○ No Response
What did the duckling see that was important?	[log]	○ Correct	○ Incorrect	○ No Response
How did the frog and the duck get out of the mud?	[climbed on log]	○ Correct	○ Incorrect	○ No Response
Why do you think the frog and the duck are friends?	[tried to help; helped each other]	○ Correct	○ Incorrect	○ No Response

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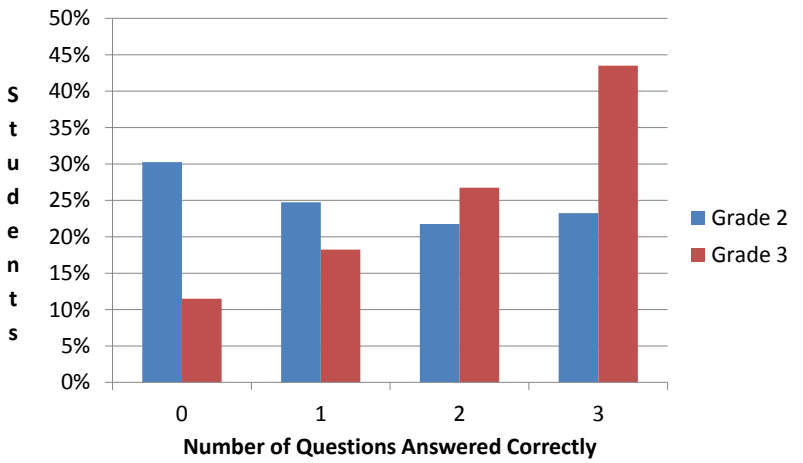
Listening Comprehension

Percentage of students answering questions correctly, by grades 2 and 3



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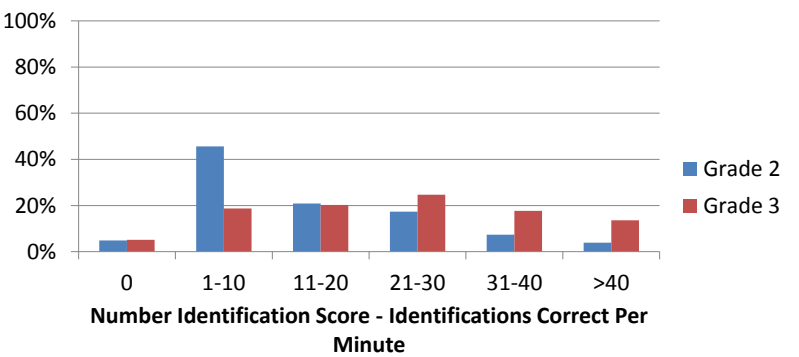
Number Identification

Number Identification: Sample Numbers

12	2	17
9	18	32
62	93	34

Scores for number identification subtask, grades 2 and 3



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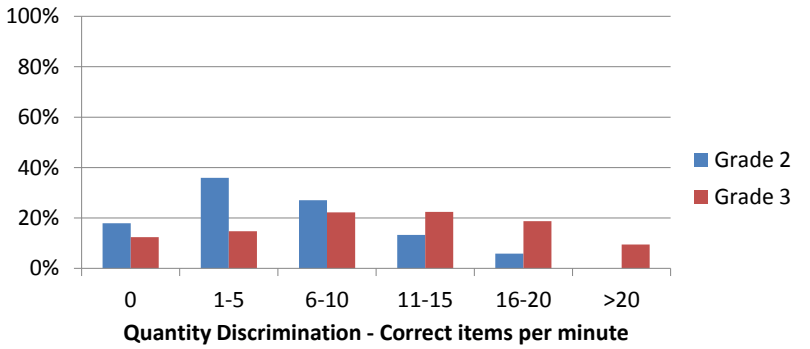
Quantity Discrimination

Quantity Discrimination: Sample

5	6
15	20
50	57

Scores for quantity discrimination subtask, grades 2 and 3



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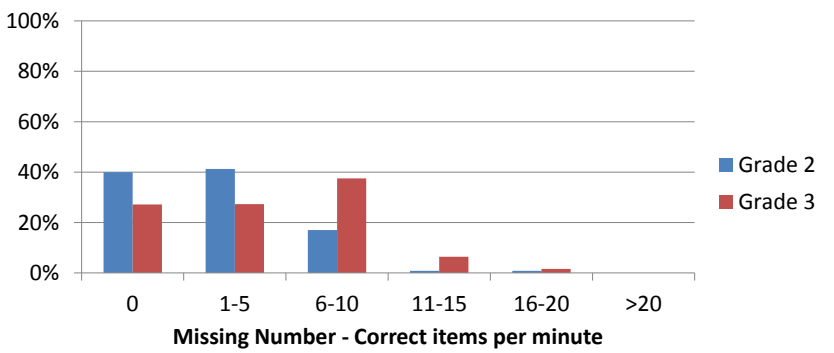
Missing Numbers

Missing Numbers: Sample

6	7	___	9
14	___	18	20
40	43	46	___

Scores for missing-number subtask, grades 2 and 3



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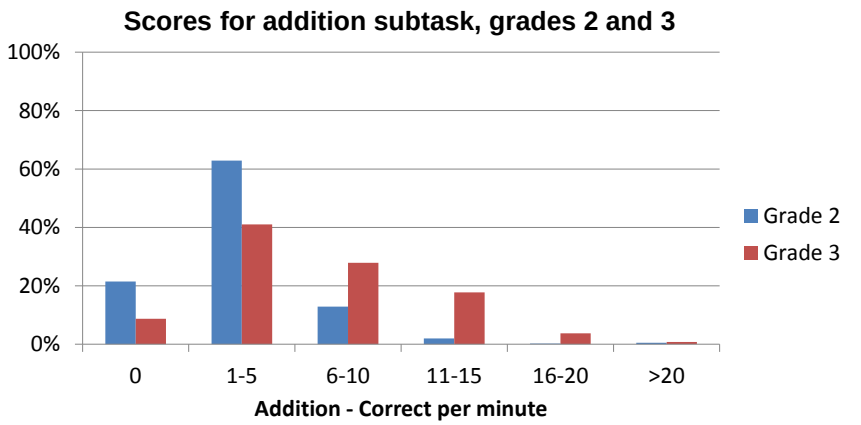
Addition

Addition: Sample

4+2 =	8+2 =	8 + 6 =
5 + 4 =	10 + 3 =	2 + 2 =



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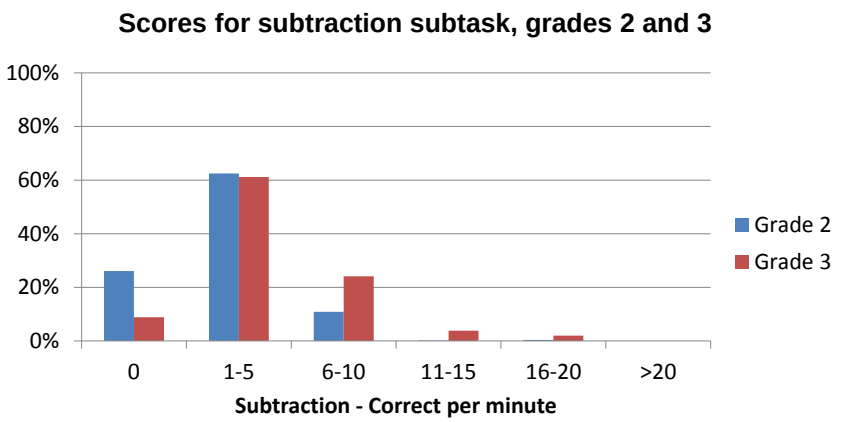
Subtraction

Subtraction: Sample

6 - 2 =	10 - 2 =	14 - 6 =
9 – 4 =	13 – 3 =	4 - 2 =



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What questions, observations, insights do these findings suggest?

What do you believe are the key factors contributing to these results?

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Sources

Craig, H. & Heneveld, W. (1996). *Schools count: World Bank project designs and the quality of primary education in Sub-Saharan Africa.* World Bank Technical Paper Number 303 (Africa Technical Department Series). Washington, DC: World Bank.

Carasco, J., Munene, C., Kasente , D., & Odada, M. (1996). *Factors affecting school effectiveness in Uganda: A Baseline study*. Kampala: Uganda National Examination Board.

Comings, J. (1995). Literacy skill retention in adult students in developing countries. *International Journal of Educational Development*, 15(1): 37–46.

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Part 3 – Analysis of Findings and Policy Implications

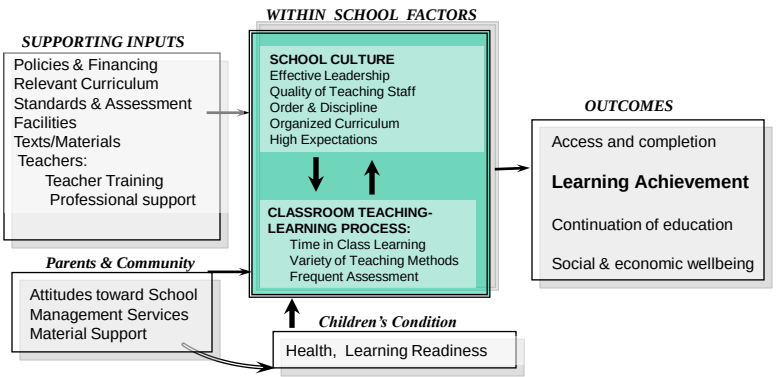
1

About the Presentation

- This presentation was prepared for a policy dialogue workshop held November 21-22, 2011, in Lusaka, Zambia. The workshop was organized by Dr. Ash Hartwell and RTI International EdData II project staff for USAID/Zambia and the Ministry of Education.
- The USAID EdData II project is led by RTI International. The effort described in this presentation was carried out under EdData II Task Order Number 7, EHC-E-07-04-00004-00.

2

Factors Linked to School Effectiveness



Based on research reported by Heneveld and Craig (1996), and Carasco et.al. (1997).

SSME Factors Related to Pupil Performance

FACTORS	READING	MATHS
Pupil Social-Economic Status		+
Pre-School Attendance		+
Tardiness - Attendance	-	-
Independent Reading	+	
Receiving Feedback	+	+
Teacher Professional Training	+	
Multigrade classes		-

Note: Statistically significant results of multiple regression models to examine which SSME factors predict student performance

Some Key Elements of Early Grade Reading: What the Research Shows

1. Language and literacy go hand in hand. A child cannot read better than s/he speaks.

2. Studies suggest that children cannot achieve fluent reading in less than one year and 250 hours of instruction and practice.

3. Children need some minimum level of one-on-one contact to get sufficient practice with feedback to achieve fluent reading.

4. Simple quantitative targets, such as reading 60 wpm, are not the final goal of reading instruction, but they can serve as leading indicators of progress towards the goal of independent reading.

5. Good reading programs will cost more per pupil. They also demand more time than is currently allocated in the curriculum. However, good reading programs may be more cost effective than weak ones.

(From Chabott, C. (2006). 'Accelerating Early Grate Reading in High Priority EFA Countries: A Desk Review. ' American Institutes of Research/EQUIP)

International Experience – Reading Strategies

- Country-wide reform – the Gambia, Liberia
- Revise curriculum and textbooks – Ethiopia
- Rewrite curriculum materials – Ethiopia, Kenya, Malawi
- Material Revision – Ghana (NALAP)

Experience from Other Counties Initiating Early Grade Literacy Programs: The Gambia Liberia

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The Gambia – Country-wide Reform

- Minister saw the problem himself
- Task force focused on early learning
- Handbook of teaching early reading
- Nationwide Grade 1-3 in-service program
- Training on the 5 foundational reading skills
- Local schools took up the federal program

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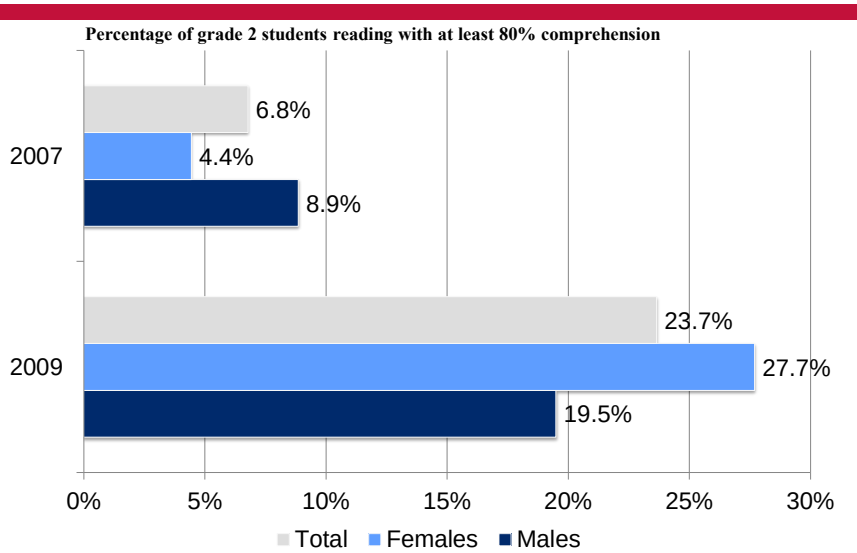
The Gambia: Results



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Liberia EGRA: Plus – Intensive Overhaul

- Started as an evidence-based project
- 15 months of support
  - Teacher Training
  - Material Development
  - Instructional support
- Eventually scaled up nation-wide with development partners

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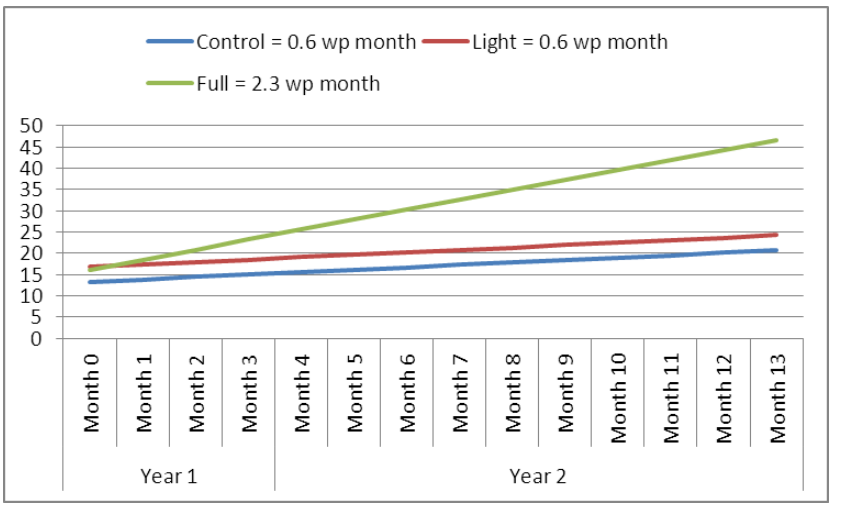
Liberia: Dramatic Increases



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Key Elements to a Nationwide Scale-up

- Learn from international experience
- Start with curriculum
- Look at time-on-task and the timetable
- Consider pulling back material development from private publishers
- Examine teacher tutor system as lever for reform
- Emphasis on sustained, systemic training
- Bring the community into the process
- Make reading THE key outcome by Standard 2

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Exercise – Developing a School Improvement Plan for Literacy 2

- The Ministry of Education is supporting the development of School Improvement Plans to enhance pupils' literacy and numeracy, especially in early grades.
- You are appointed to the SIP which includes 2 teachers (grades 2 and 3), the Headteacher, the Chair of the PTA, the DESO, a representative of the MoE and from a Development Agency
- Your task is to develop a SIP strategy – drawing on the findings from SMME, EGRA and ESMA, from other assessments and performance reviews , and from research on early grade literacy.
- Each member of the team should draw on their own experience and on information from research and recommendations related to early grade literacy.

Exercise – Developing a School Improvement Plan for Literacy

Your plan should be cost-effective, be feasible to initiate in the next two years, and include the following:

1) Describe the current status of school conditions and student performance on reading and mathematics in grades 2 and 3.
2) Identify the key factors which you believe will improve pupils' reading and maths performance
3) Indicate what changes are necessary to achieve this improvement.
4) What policies,programs and/or resources would your school need to achieve progress?
   - National Level
   - District level
   - School level
   - Classroom level
5) Key indicators that you will use to measure progress and targets for improvement over the next 2 years.