

2007 IRI GRADE 1 EVALUATION REPORT

An assessment of the Grade 1 learners in GRZ schools in Zambia.

January 2009

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EXECUTIVE SUMMARY

In 2007, the Ministry of Education implemented the roll out of the *Zambian Interactive Radio Instruction (IRI) radio programme-Learning at Taonga Market (LTM)*, broadcasting to Grade 1 learners in Government schools. Over 4,000 teachers were trained and 8,000 wind-up radios and 4,500 teacher's guides distributed to schools.

Over 900 learners were tested in the two provinces of Zambia, namely Central and Copperbelt. These learners were sampled from 31 government schools using IRI as a supplementary teaching and learning methodology (IRI schools) and 14 schools that did not use the methodology (Control schools).

In 2007, there were 4,345 basic schools and 203,489 Grade 1 learners of which 103,268 were boys and 100,221 girls representing 50.7% and 49.2% enrolment proportions respectively. Half of teachers reported that they taught very large class sizes in both IRI and control schools and 36% reported that they taught smaller classes of Grade 1 learners of less than 40 in Control schools. It was found that only 6% taught smaller classes of less than 40 learners in IRI schools. Control schools had fewer teachers that taught learners between 40 and 69. However, it has also been observed that performance for IRI learners has not been affected by class size.

The success of the *IRI-Learning at Taonga Market* depends on the learners listening to the radio broadcasts. Teachers in all the IRI schools reported that they had acceptable radio reception and that they found it useful as a supplementary "value added" teaching and learning methodology.

IRI learners achieved significantly higher gains than learners in the control group in the areas of Numeracy and *Zambian language literacy*.

However, there are a number of reasons why there was poor overall performance in literacy among learners from the IRI and Control schools. One of the factors that could contribute to this result is the large class sizes in most schools as teachers found it difficult to give added individual attention to learners with problems in reading and writing skills.

1.0 BACKGROUND

Learning at Taonga Market (LTM) is a series of educational programs that deliver the basic educational curriculum, using the Interactive Radio Instruction (IRI) approach. LTM is a delivery of the Zambian Basic Education Curriculum Framework that infuses methodologies such as New Breakthrough to Literacy (NBTL) and Step Into English (SITE) with IRI methodology. The lessons are written and recorded by the Education Broadcasting Services (EBS) section of the Directorate of Open and Distance Education (DODE) in the Ministry of Education (MOE), under the auspices of the USAID-funded Quality Education Services Through Technology (QUESTT) Project. Each lesson consists of a 30-minute broadcast, along with activities that the class completes before and after the broadcast. The activities for each lesson and the program are described in a Mentor's guide. The programme follows the national curriculum and the MOE's calendar of three terms. There are 150 lessons at each grade level, plus five teacher training broadcasts at the beginning of each term.

The Zambia National Broadcasting Corporation broadcast Grade 1 radio programmes in 2000 in a pilot exercise. Since then, EBS has been developing programmes for additional grades and in 2006 LTM was broadcast to Grades 1 to 6. Grade 7 programmes were broadcast in 2007.

1.2 The 2005 Evaluation report

The following were findings from the 2005 assessment of IRI in the 36 pilot GRZ schools;

1. Do the pilot schools receive the radio broadcasts?

All 36 schools had a radio that was working at the time of the monitoring visit. Almost 90% had either very clear or acceptable radio reception, but 65% reported that the radio reception was either very clear or acceptable during for all the 5 days in the week.

2. Can teachers conduct lessons using the broadcasts effectively?

It was found that teachers followed the instructions of the radio teacher and used all the listed materials for the lessons that were observed. Teachers also engaged learners during the lesson. Learners were highly motivated during the lessons. They liked songs and games and also improved their listening skills to the lessons. Radio also promoted good class and time management.

3. Do teachers integrate the educational broadcasts into their daily schedules and do the programmes help them teach effectively?

51% of the teachers found that it has been easy to integrate LTM programmes into their daily schedule and 70% found that they spent less time preparing for lessons because the lesson plan for LTM was already drawn up. Only 14% of the teachers reported that it was difficult to integrate LTM into their daily programme.

4. Are learning gains greater for learners who use the radio broadcasts than those who do not use them?

The mean scores for IRI schools were 45.6% while Control schools (those not doing radio broadcasts) was 40.1%. These were significant gains for IRI learners in GRZ schools enough to offer a solid platform for the roll out of the programme to more GRZ schools in all the provinces.

2.0 INTRODUCTION

In 2007, MOE rolled-out IRI methodology in GRZ schools. The process included the training of MOE administrators and teachers in the administration and management of IRI.

The FTI-funded IRI expansion focused on GRZ schools in Grade 1. One of the objectives for testing grade 1 IRI GRZ learners was to show the dramatic impact created by this investment. Hence the testing was to measure the impact that the investment has on children's learning in Grade 1.

LTM is being used in government schools to supplement other methodologies, such as NBTL, SITE, ROC and MARK. In 2005, LTM was piloted at Grade 1 in 36 government schools. Learners in the 36 pilot schools and 14 control schools were tested at the beginning and the end of the year. The pilot results showed:

- Learners using LTM had greater gains in English and Numeracy
- Girls and boys using LTM had equal learning gains
- Enrolment increased in LTM classes
- LTM motivated learners and promoted good time and class management

Given the effectiveness of LTM and the need to improve access to quality education, the Ministry of Education approved of the roll-out of LTM to community and GRZ schools throughout Zambia for January 2007. With the roll-out of IRI to GRZ schools, the number of GRZ learners using IRI promises to grow dramatically.

2.1 EVALUATION METHODOLOGY

2.1.1 Sampling Design

The sampling plan took into consideration the primary goal of the evaluation to ascertain whether the broadcasting of the Learning at Taonga Market radio programmes is an effective tool for teaching English language and Numeracy to Grade One pupils in Zambian Government schools.

MOE expected to test 980 grade 1 learners in both IRI GRZ schools and control non-IRI GRZ schools. 660 learners were to be sampled from Grade 1 IRI GRZ classes and 320 learners will be Grade 1 control learners. The test targeted learners in Central province and Copperbelt province. Two districts in each province were selected where 1 district was to be the "2005 to 2006 IRI GRZ pilot" district while the other one a non-GRZ pilot district.

It was determined that 20 learners from both schools using IRI and not using IRI should be tested. Using the number of enrolled learners from the Ministry of Education database of 24,608 learners being taught by teachers using the IRI methodology, it can be deduced that there was on average 40.51 learners per class in Central province and 41.11 learners per class in the Copperbelt province and that, on average, the number of learners sampled was 50 per cent of the total number of learners.

2.1.2 Testing

Learners were tested in Grade 1 Zambian language literacy and Numeracy. The post-test model was used to test the learners in IRI GRZ schools and control non-IRI GRZ schools.

The comparison between the IRI GRZ schools with the control non-IRI GRZ schools will serve to highlight the “value-added” that IRI provides as a supplement to the regular school work that goes on in the Government schools.

A total of 928 learners from the 31 IRI GRZ Schools and 14 Control GRZ schools were tested and the breakdown of the province, type of school and gender is presented in table 1.

Table 1: Total number of schools in the sample, by province and school type

Province	Total IRI schools	Sampled IRI GRZ schools	Control schools
Central	54	17	11
Copperbelt	101	14	3
Total	155	31	14

2.1.3 Implementation

The 2007 IRI Grade 1 Evaluation began on September 24, 2007 and ended on October 12, 2007. Testing in GRZ schools took 2 weeks in Central and Copperbelt provinces of Zambia.

2.2 DESCRIPTIVE STATISTICS

2.2.1 Profile of learners in sampled GRZ schools

The table below shows that 49.3% of the learners in IRI classes in GRZ schools were girls while 50.7% were boys.

Table 2: Total number of learners in the sample by gender, province and school type

Province	Total IRI Learners		Total Learners in Sampled schools		Total learners in Control schools	
	Male	Female	Male	Female	Male	Female
Central	4,895	4,703	181	177	92	90
Copperbelt	10,213	10,013	137	121	80	57
Total	15,108	14,716	318	298	172	147
<i>Percentage</i>	<i>50.7%</i>	<i>49.3%</i>	<i>51.6%</i>	<i>48.4%</i>	<i>53.9%</i>	<i>46.1%</i>

The age distribution of the learners that were tested is presented below. It can be seen that the average age for all learners again was close to 8 years. The difference in the average age of learners in IRI GRZ schools and Control GRZ schools was zero. The lowest age recorded for a learner tested was 6 years and the highest was 8 years.

Table 3: Age distribution of learners tested in IRI GRZ school and Control GRZ school

	IRI GRZ schools	Control GRZ schools	Overall
Mean Age	7.7	7.7	7.7
Modal Age	7	7	7
Minimum Age	6	6	6
Maximum Age	8	7	7.5

Since the average age of the learners in the IRI GRZ schools and the Control GRZ schools is almost even, the influence of age as a contributing factor to learning achievement may not have an influence on the differences in achieved learning achievement between the IRI GRZ schools and Control GRZ schools.

2.3 PURPOSE OF THE EVALUATION

The overall goal of this evaluation was to determine if LTM is an effective resource for teaching in Zambian schools lower basic Grade levels and assess the demand for it.

Evaluation objectives were as follows;

1. Is there demand for IRI in GRZ schools?
2. Do the Grade 1 schools have good reception?
3. Can teachers conduct lessons using the broadcasts effectively?
4. Do teachers integrate the educational broadcasts into their daily teaching schedule?
5. Are learning gains greater for learners who use the radio broadcasts than those who do not use them?

3.0 FINDINGS

3.1 Is there demand for IRI in GRZ schools?

The Learning at Taonga Market radio programmes is made with the intent to have pupils and teachers enjoy being in the classroom. The tools of learning involve songs, structured games and plays that aside from being enjoyable for the pupils reinforces the concepts and facts of the learning objective of a given lesson or segment of lesson.

It was recommended from the findings of the 2005 pilot in GRZ schools that in 2007, the Ministry of Education (MOE) should introduce LTM at Grades 1 and 2 to all schools in the four provinces where LTM has been piloted. However, it was decided that the rollout should cover all the provinces of Zambia. The table below shows the Grade 1 learner population in GRZ schools for 2007.¹

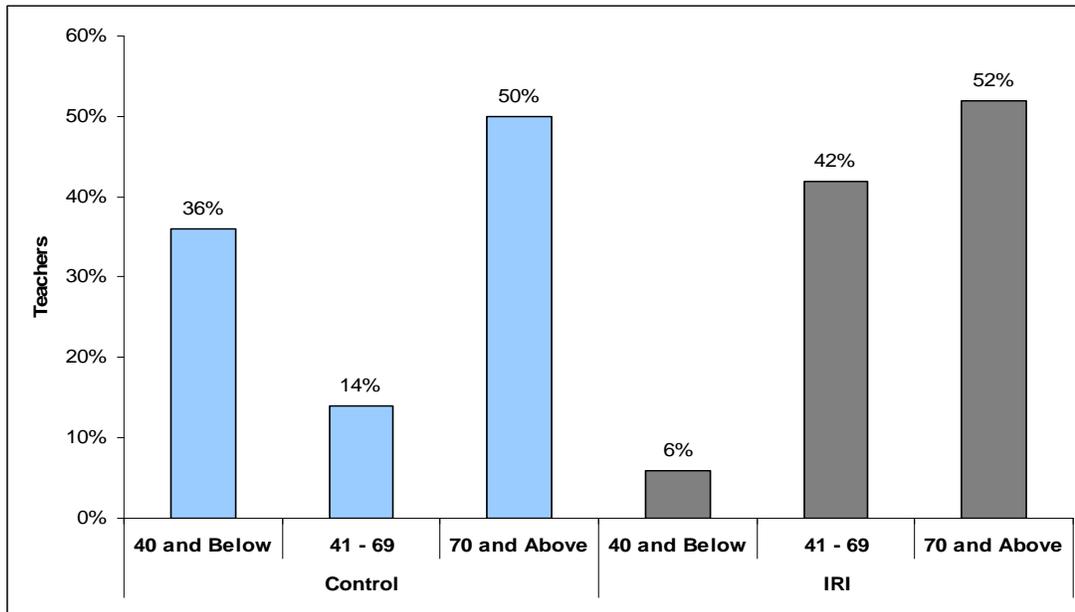
Table 4: Total number of learners in IRI GRZ schools

Province	Number of GRZ schools	Male	Female	Total Learners
Central	467	11,088	11,024	22,112
Copperbelt	364	14,748	18,290	33,038
Eastern	635	8,735	9,083	17,818
Luapula	340	9,543	9,439	18,982
Lusaka	185	18,989	11,041	30,030
North Western	402	7,849	8,839	16,688
Northern	804	12,255	12,095	24,350
Southern	621	11,929	12,229	24,158
Western	527	8,132	8,181	16,313
Total	4,345	103,268	100,221	203,489

Half of teachers reported that they taught very large class sizes in both IRI and control schools and 36% reported that they taught smaller classes of Grade 1 learners of less than 40 in Control schools. It was found that only 6% taught smaller classes of less than 40 learners in IRI schools. Control schools had fewer teachers that taught learners between 40 and 69.

Figure 1: Class sizes taught in the year

¹ Source: Zambia Annual School Census, 2007



3.2 The relevance of the radio broadcasts

The relevance of the radio broadcast was anchored on the principle that if the teachers' perception of the relevance of radio lessons to the classroom lesson management ranked very low, then the effectiveness of LTM as a conduit for a supplementary "value added" teaching and learning methodology can not be realised.

Results show that 100% of the teachers in IRI schools in both provinces found the broadcasts useful with 85.7% and 64.7% finding them *Very useful* in Copperbelt and Central provinces respectively. 35% found them *Useful* in Central province only 14% of the teachers interviewed acknowledged the relevance of the broadcasts in Copperbelt province.

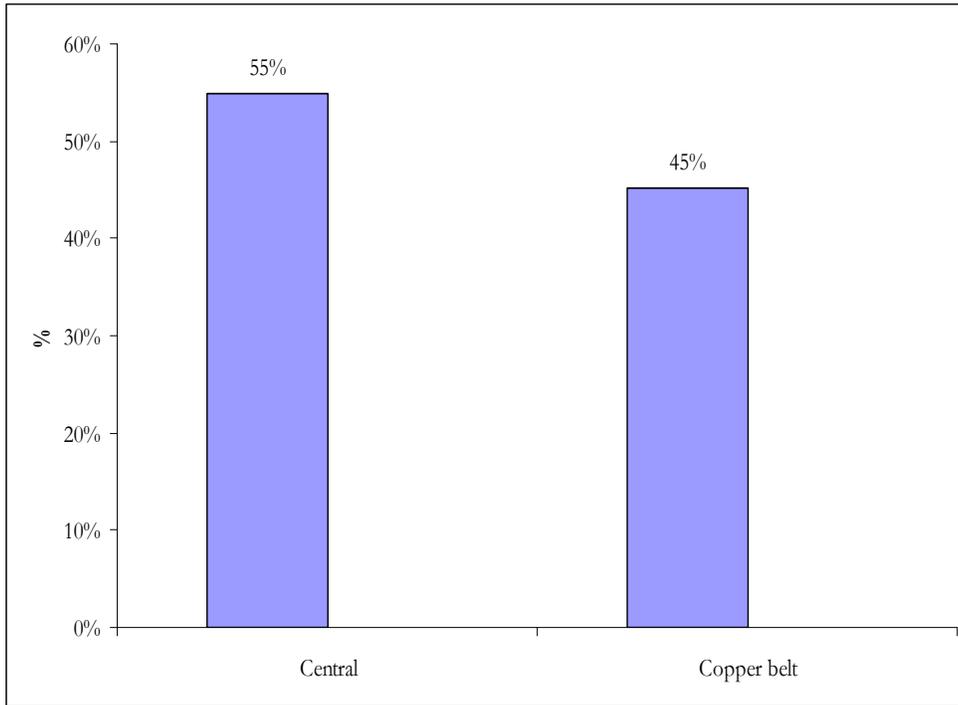
Table 5: Frequency distribution on the usefulness of radio lessons to teachers, by school type and province

Province	# of days	Frequency	Percent
Central	Very Useful	11	64.7%
	Useful	6	35.3%
	Total	17	100%
Copperbelt	Very Useful	12	85.7%
	Useful	2	14.3%
	Total	14	100%

3.3 Do the IRI Grade 1 schools have good reception?

All the 31 schools sampled in the evaluation had working radios. 55% of the schools that had good reception were from the Central province and the rest came from Copperbelt.

Figure 2: Percentage of schools with good radio reception by province.



3.4 Can teachers conduct lessons using the broadcasts effectively?

3.4.1. Availability of Teaching and Learning materials

Teachers need additional print materials to conduct lessons effectively. 91% of the schools in IRI schools had a supply of mentor's Guide to aid in the delivery of quality teaching in schools.

3.4.2 Observations from lessons observed

73% of the schools used the language of play as language of classroom instruction. This would place learners at an advantage of adapting easily to the radio instructions. 96% of the schools did pre- and post-broadcast activities as part of the LTM methodology. 98% of the teachers reported that the use of LTM in class was useful in the delivery of lessons to the learners.

Table 6: Observation from lessons results by item and province

Province		Central	Copperbelt	Total
Item				
Is language of play used in classroom instruction	Yes	18 (40%)	15 (33%)	33 (73%)
	No	10 (22%)	2 (4%)	12 (27%)
Pre- and Post broadcast activities done	Yes	27 (58%)	16 (36%)	43 (96%)
	No	2 (4%)	0 (0%)	2 (4%)
Usefulness of LTM in class	Yes	27 (60%)	17 (38%)	44 (98%)
	No	1 (2%)	0 (0%)	1 (2%)

3.5 Do teachers integrate the educational broadcasts into their daily teaching schedule?

Only 3.3% of the schools reported that lessons did not fit in the schedule every day. However, more teachers were able to report that they found it easy to integrate the broadcasts into their schedule because they found it easy to prepare radio lessons.

3.6 Are learning gains greater for learners who use the radio broadcasts than those who do not use them?

The analysis in the following sections will focus on comparisons between learners performance. First, statistics on the performance for learners in IRI GRZ schools and Control GRZ schools will be presented to show how learners in the different treatment groups perform. Secondly, analyses will also be presented that show how male and female learners performed on the tests, and how students from different geographical regions and demographic characteristics performed. Additional analyses will also be performed to indicate whether there are statistically significant differences between treatment groups.

4.0 OVERALL PERFORMANCE BETWEEN IRI AND CONTROL SCHOOLS

Overall performance in Numeracy was good with learners scoring an average of 66.7% and learners from IRI schools performing better (71.7%) than those from Control schools (56.8%). Poor overall performance was recorded in Literacy, however, with an average of 23.2%. Learners from IRI GRZ schools scored 28.0% while learners from Control schools scored 13.7%. The findings are presented in the table below.

Table 7: Mean scores for all learners by school type and sub test

Type of school		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Control schools [N=312]	Mean	4.0	14.8	18.8
	Percent	13.7%	56.8%	34.1%
IRI schools [N=616]	Mean	8.1	18.6	26.8
	Percent	28.0%	71.7%	48.6%
Total schools [N=928]	Mean	6.7	17.3	24.1
	Percent	23.2%	66.7%	43.7%

4.1 Performance by province, school type and sub test

The following results indicate that learners in IRI schools performed better than learners from Control schools.

In the Central Province, the percentage mean score on the overall test for learners from IRI schools was 40.5%, while those from control schools were 34.6%. The scores for Numeracy were 66.2% for IRI learners compared to 60.8% for learners in Control schools and a 17.5% score was recorded in Literacy for IRI while 11.2% was scored by Control learners.

In Copperbelt province, learners from IRI schools achieved an overall mean score of 59.8%, while those from control schools achieved 33.5%. In Numeracy, the IRI learners gained 79.3% mean score against 51.8% for learners in Control schools and 42.4% was scored in Literacy for IRI learners compared to 16.9% achievement for Control learners.

IRI learners in the Copperbelt province had a higher overall percentage score than those from the Central province. Similarly, the IRI learners from the Copperbelt scored better than their counterparts in Central province in both sub tests.

Table 8: Performance by province, school type and sub test

Province	Type of School		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Central	Control schools [N=174]	Mean	3.2	15.8	19.1
		Percent	11.2%	60.8%	34.6%
	IRI schools [N=357]	Mean	5.1	17.2	22.3
		Percent	17.5%	66.2%	40.5%
	Total schools [N=531]	Mean	4.5	16.7	21.2
		Percent	15.4%	64.4%	38.6%
Copperbelt	Control schools [N=138]	Mean	4.9	13.5	18.4
		Percent	16.9%	51.8%	33.4%
	IRI schools [N=259]	Mean	12.3	20.6	32.9
		Percent	42.4%	79.3%	59.8%
	Total schools [N=397]	Mean	9.7	18.1	27.9
		Percent	33.5%	69.7%	50.6%
Total	Control schools [N=312]	Mean	4.0	14.8	18.8
		Percent	13.7%	56.8%	34.1%
	IRI schools [N=616]	Mean	8.1	18.6	26.8
		Percent	28.0%	71.7%	48.6%
	Total schools [N=928]	Mean	6.7	17.3	24.1
		Percent	23.2%	66.7%	43.7%

4.2 Performance by attendance, school type and sub test

At the time of testing, the test administrators tested pupils with attendance rates ranging from Low to High. Administrators rated the attendance of pupils as High (attended 100-120 radio lessons), Medium (80-99 lessons) or Low (less than 80 lessons).

Learners with Low attendance ratings scored higher in Numeracy with mean percent scores of 78.5% than learners with High and Medium attendance ratings that scored 69.8% and 61.2% respectively. Learners with high attendance ratings scored higher scores in Literacy than those from Medium and Low categories. However, overall results indicate that those with high attendance performed better than those with medium and low attendance.

Learners had higher percentage scores in all attendance ratings compared to those in Control schools. In Numeracy, learners with low attendance scored higher than the control learners in the same category. Although overall performance gains in literacy were low, IRI learners scored better than control learners in all the attendance ratings.

Table 9: Performance by school type, attendance and sub test

Type of School	Attendance		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Control schools	High [N=185]	Mean	5.1	15.3	20.4
		Percent	17.7%	58.8%	37.1%
	Medium [N=104]	Mean	2.4	14.2	16.6
		Percent	8.3%	54.4%	30.1%
	Low [N=3]	Mean	3.0	11.7	14.7
		Percent	10.3%	44.9%	26.7%
	Total [N=292]	Mean	4.1	14.8	19.0
		Percent	14.3%	57.1%	34.5%
IRI schools	High [N=395]	Mean	10.1	19.5	29.6
		Percent	34.9%	75.0%	53.8%
	Medium [N=208]	Mean	4.4	16.8	21.2
		Percent	15.3%	64.5%	38.6%
	Low [N=12]	Mean	6.5	22.6	29.1
		Percent	22.4%	86.9%	52.9%
	Total [N=615]	Mean	8.1	18.6	26.8
		Percent	28.0%	71.7%	48.6%
Total schools	High [N=580]	Mean	8.5	18.2	26.7
		Percent	29.4%	69.8%	48.5%
	Medium [N=312]	Mean	3.8	15.9	19.7
		Percent	13.0%	61.2%	35.7%
	Low [N=15]	Mean	5.8	20.4	26.2
		Percent	20.0%	78.5%	47.6%
	Total [N=907]	Mean	6.8	17.4	24.3
		Percent	23.6%	67.0%	44.1%

4.3 Performance by province, school type, attendance and sub test

Overall performance was high in both provinces for learners with high attendance in Numeracy. Furthermore, better results were recorded among learners with low attendance ratings in the Copperbelt province. However, results also show that performance in Numeracy was high regardless of the learners' attendance across the provinces.

In both provinces, IRI learners performed better than their counterparts with same attendance rating in Control schools in both Numeracy and Literacy.

Table 10 illustrates in detail the performance ratings of learners.

Table 10: Performance by province, school type, attendance and sub test

Province	Type of School	Attendance		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Central	Control schools	High [N=88]	Mean	4.3	16.4	20.7
			Percent	14.8%	63.2%	37.6%
		Medium [N=86]	Mean	2.2	15.2	17.4
			Percent	7.5%	58.4%	31.6%
		Total [N=174]	Mean	3.2	15.8	19.1
			Percent	11.2%	60.8%	34.6%
	IRI schools	High [N=180]	Mean	6.7	18.4	25.1
			Percent	23.2%	70.8%	45.7%
		Medium [N=177]	Mean	3.4	16.0	19.4
			Percent	11.7%	61.5%	35.2%
		Total [N=357]	Mean	5.1	17.2	22.3
			Percent	17.5%	66.2%	40.5%
Copperbelt	Control schools	High [N=97]	Mean	5.9	14.3	20.2
			Percent	20.4%	54.8%	36.7%
		Medium [N=18]	Mean	3.5	9.2	12.7
			Percent	12.1%	35.5%	23.1%
		Low [N=3]	Mean	3.0	11.7	14.7
			Percent	10.3%	44.9%	26.7%
	Total [N=118]	Mean	5.5	13.4	18.9	
		Percent	18.9%	51.6%	34.4%	
	IRI schools	High [N=215]	Mean	12.9	20.4	33.4
			Percent	44.7%	78.5%	60.7%
		Medium [N=31]	Mean	10.3	21.3	31.6
			Percent	35.6%	81.8%	57.4%
		Low [N=12]	Mean	6.5	22.6	29.1
			Percent	22.4%	86.9%	52.9%
Total [N=258]	Mean	12.3	20.6	32.9		
	Percent	42.5%	79.3%	59.9%		
Total	Control schools	High [N=185]	Mean	5.1	15.3	20.4
			Percent	17.7%	58.8%	37.1%
		Medium [N=104]	Mean	2.4	14.2	16.6
			Percent	8.3%	54.4%	30.1%
		Low [N=3]	Mean	3.0	11.7	14.7
			Percent	10.3%	44.9%	26.7%
	Total [N=292]	Mean	4.1	14.8	19.0	
		Percent	14.3%	57.1%	34.5%	
	IRI schools	High [N=395]	Mean	10.1	19.5	29.6
			Percent	34.9%	75.0%	53.8%
		Medium [N=208]	Mean	4.4	16.8	21.2
			Percent	15.3%	64.5%	38.6%
		Low [N=12]	Mean	6.5	22.6	29.1
			Percent	22.4%	86.9%	52.9%
Total [N=615]	Mean	8.1	18.6	26.8		
	Percent	28.0%	71.7%	48.6%		

4.4 Performance by school type, sex and sub test

Results show a very minimal difference in performance between female and male learners.

Overall performance show that male learners scored 44.6% and female learners scored 42.8%. In Numeracy, male learners performed better than female learners by scoring 67.8% achievement rates while female learners' scores were at 65.5%.

Male learners performed better in both sub tests than female learners in IRI and Control schools.

However, the male and female learners in IRI schools performed better than their counterparts in Control schools in Numeracy and Literacy sub tests.

Table 11: Performance by school type, sex and sub test

Type of School	Sex		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Control schools	Male [N=170]	Mean	4.3	15.0	19.3
		Percent	14.7%	57.7%	35.0%
	Female [N=142]	Mean	3.6	14.5	18.1
		Percent	12.5%	55.8%	33.0%
	Total [N=312]	Mean	4.0	14.8	18.8
		Percent	13.7%	56.8%	34.1%
IRI schools	Male [N=318]	Mean	8.4	19.0	27.4
		Percent	28.8%	73.1%	49.8%
	Female [N=298]	Mean	7.9	18.2	26.1
		Percent	27.1%	70.1%	47.4%
	Total [N=616]	Mean	8.1	18.6	26.8
		Percent	28.0%	71.7%	48.6%
Total schools	Male [N=488]	Mean	6.9	17.6	24.5
		Percent	23.9%	67.8%	44.6%
	Female [N=440]	Mean	6.5	17.0	23.5
		Percent	22.4%	65.5%	42.8%
	Total [928]	Mean	6.7	17.3	24.1
		Percent	23.2%	66.7%	43.7%

In both provinces, overall performance rates between sexes are almost the same. Both sexes in Copper belt province performed better than their counterparts in Central province.

There were significant gains in Numeracy in both provinces and between sexes. The following table shows the results.

Table 12: Performance by province, sex and sub test

Province	Sex		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Central	Male [N=270]	Mean	4.7	17.2	21.9
		Percent	16.1%	66.2%	39.8%
	Female [N=261]	Mean	4.3	16.3	20.5
		Percent	14.8%	62.5%	37.4%
	Total [N=531]	Mean	4.5	16.7	21.2
		Percent	15.4%	64.4%	38.6%
Copperbelt	Male [N=218]	Mean	9.7	18.1	27.9
		Percent	33.6%	69.7%	50.6%
	Female [N=179]	Mean	9.7	18.2	27.9
		Percent	33.5%	69.8%	50.7%
	Total [N=397]	Mean	9.7	18.1	27.9
		Percent	33.5%	69.7%	50.6%
Total	Male [N=488]	Mean	6.9	17.6	24.5
		Percent	23.9%	67.8%	44.6%
	Female [N=440]	Mean	6.5	17.0	23.5
		Percent	22.4%	65.5%	42.8%
	Total [N=928]	Mean	6.7	17.3	24.1
		Percent	23.2%	66.7%	43.7%

4.5 Performance by Age

Performance by age results show that learners above the recommended grade age performed better than those in the recommended age category and below. There is minimal difference in the performance of learners between learners below and within the recommended age.

Table 13: Performance by age

Age category		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Below recommended age (below 7 years) [N=453]	Mean	6.5	16.8	23.3
	Percent	22.4%	64.5%	42.3%
Recommended age (7-8 years) [N=271]	Mean	6.8	16.7	23.5
	Percent	23.4%	64.1%	42.7%
Above recommended age (above 8 years) [N=204]	Mean	7.1	19.5	26.6
	Percent	24.5%	75%	48.4%

4.6 Performance by age and school type

Learners in IRI schools performed better than those in Control schools in both Numeracy and Literacy across all age categories.

In the category of below the recommended age (below 6 years), IRI learners achieved higher percentage scores in both Numeracy and Literacy than the Control learners.

The following table illustrates the performance rates.

Table 10: Performance by age and school type

Age category	School type		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Below recommended age (below 7 years)	Control schools [N=157]	Mean	3.3	14.2	17.5
		Percent	11.3%	54.6%	31.8%
	IRI schools [N=296]	Mean	8.2	18.1	26.3
		Percent	28.3%	69.7%	47.9%
Recommended age (7-8 years)	Control schools [N=92]	Mean	4.2	13.3	17.5
		Percent	14.3%	51.2%	31.8%
	IRI schools [N=179]	Mean	8.2	18.4	26.5
		Percent	28.1%	70.7%	48.2%
Above recommended age (above 8 years)	Control schools [N=63]	Mean	5.5	18.3	23.8
		Percent	18.8%	70.5%	43.3%
	IRI schools [N=141]	Mean	7.9	20	27.9
		Percent	27.1%	77.1%	50.7%

4.7 Performance by age and sex

The table below shows that female learners below the recommended age performed better than in both Literacy and Numeracy while male learners in the recommended age and above performed better than female learners in both Literacy and Numeracy.

Table 14: Performance by age and sex

Age category	School type		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Below recommended age (below 7 years)	Male [N=222]	Mean	6.3	16.6	22.9
		Percent	21.7%	63.9%	41.7%
	Female [N=231]	Mean	6.7	16.9	23.6
		Percent	23.2%	65%	42.9%
Recommended age (7-8 years)	Male [N=142]	Mean	7	17.4	24.4
		Percent	24.2%	66.8%	44.4%
	Female [N=129]	Mean	6.5	15.9	22.4
		Percent	22.5%	61.1%	40.8%
Above recommended age (above 8 years)	Male [N=124]	Mean	8	19.7	27.6
		Percent	27.5%	75.7%	50.2%
	Female [N=204]	Mean	5.8	19.3	25.1
		Percent	24.5%	75%	48.4%

5.0 THE LEARNING ENVIRONMENT

The ideal learning environment for LTM broadcasts should be one that has sufficiently good quality radio reception, ensures the availability of teaching and learning materials, like Mentor’s Guides, where the language of Play is also the language of instruction used to communicate in the classroom and the number of days the radio lessons are broadcast with a clear reception. Teachers’ perception of the relevance and effectiveness of the methodology, as a supplement to the conventional teaching practices, is a very aspect in the delivery of radio lesson broadcasts.

5.1 FACTORS AFFECTING PERFORMANCE IN GRADE 1

There is interplay of factors that affect daily teaching and learning practices in schools. Some of these are thought to have a direct or indirect influence in the outcome of learner participation and performance in class.

5.1.1 Performance by class size and school type

Learners from IRI schools performed better in both sub tests than those from Control schools. Learners from classes with 70 learners and above performed better than others from both IRI and Control schools.

Furthermore, learners from IRI schools with size of 70 and more, performed better than those from Control schools with the same class size.

Table 15: Summary Performance by class size and school type

Type of School	<i>How many grade 1 learners are there in your class?</i>		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Control	40 and Below (5)	Mean	1.9	15.0	16.9
		Percent	6.6%	57.7%	30.8%
	41 - 69 (2)	Mean	1.6	13.5	15.1
		Percent	5.7%	51.9%	27.5%
	70 and above (7)	Mean	5.4	17.2	22.6
		Percent	18.7%	66.1%	41.1%
	Total (14)	Mean	3.0	15.4	18.4
		Percent	10.3%	59.1%	33.4%
IRI	40 and Below (2)	Mean	7.4	18.1	25.5
		Percent	25.5%	69.7%	46.4%
	41 - 69 (13)	Mean	6.3	17.5	23.8
		Percent	21.8%	67.2%	43.3%
	70 and above (16)	Mean	9.5	19.5	29.0
		Percent	32.7%	75.1%	52.8%
	Total (31)	Mean	8.1	18.6	26.8
		Percent	28.0%	71.7%	48.6%

5.1.2 Availability of Mentor’s Guide

Results show that most of the IRI schools in both provinces had Mentor’s Guide available for their teachers to deliver LTM lessons in their classes. In Copperbelt province, only 2 schools out of the

14 IRI schools were found not to have the guide. The same of number of schools out of 17 IRI schools in Central province had no guides too.

Table 16: Availability of Mentor’s Guide by school type and province

Type of school	Province	Response	Frequency	Percent
Control	Central	Yes	11	100
	Copperbelt	Yes	3	100
IRI	Central	Yes	15	88.2
		No	2	11.8
		Total	17	100
	Copperbelt	Yes	12	85.7
		No	2	14.3
		Total	14	100

5.1.3 Performance by school type, province and availability of mentor’s guide

In Central province, learners from IRI schools who have a copy of the mentor’s guide performed better than those from Control schools who also reported to have copy of the mentor’s guide in both sub tests with 24% in Literacy against 11.2% and 67.5% in Numeracy against 60.8%.

In Copperbelt province, learners from the IRI schools with a copy of mentor’s guide performed better than those from Control schools with a copy of the mentor’s guide in both sub tests with 42.8% in Literacy against 7.7% and 80.3% in Numeracy against 53.7%.

Generally, IRI learners from schools with a copy of mentor’s guide in Copperbelt province performed better than the learners with the guide from the IRI schools in Central province.

The following table illustrates the results in detail.

Table 17: Summary Performance by school type, province and availability of mentor's guide

Province	Type of School	<i>Do you have a copy of the mentor's guide?</i>		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Central	Control schools	Yes	Mean	3.2	15.8	19.1
			Percent	11.2%	60.8%	34.6%
	IRI schools	Yes	Mean	4.8	17.6	22.4
			Percent	16.7%	67.5%	40.7%
		No	Mean	7.0	14.4	21.3
			Percent	24.0%	55.3%	38.8%
	Total schools	Yes	Mean	4.3	16.9	21.2
			Percent	14.7%	65.2%	38.6%
No		Mean	7.0	14.4	21.3	
		Percent	24.0%	55.3%	38.8%	
Copperbelt	Control schools	Yes	Mean	2.2	14.0	16.2
			Percent	7.7%	53.7%	29.5%
	IRI schools	Yes	Mean	12.4	20.9	33.3
			Percent	42.8%	80.3%	60.5%
		No	Mean	10.8	17.2	28.0
			Percent	37.4%	66.0%	50.9%
	Total schools	Yes	Mean	10.5	19.6	30.0
			Percent	36.1%	75.2%	54.6%
No		Mean	10.8	17.2	28.0	
		Percent	37.4%	66.0%	50.9%	
Total	Control schools	Yes	Mean	3.0	15.4	18.4
			Percent	10.3%	59.1%	33.4%
	IRI schools	Yes	Mean	8.1	19.0	27.1
			Percent	28.0%	73.0%	49.3%
		No	Mean	8.2	15.2	23.4
			Percent	28.2%	58.6%	42.6%
	Total schools	Yes	Mean	6.6	17.9	24.5
			Percent	22.8%	69.0%	44.6%
No		Mean	8.2	15.2	23.4	
		Percent	28.2%	58.6%	42.6%	

5.1.4 Is the language of Play and Instruction the same in the Community?

Teachers were asked whether the language of Play and Instruction was the same in the Community. This has a profound influence on the learner performance in literacy assessment in the classroom in that the literal capacity reinforcement is expected to come from the Community.

In both provinces, more than half of the schools reported that the language of Play and Instruction was the same while all Control schools in the Copperbelt province used the same language for both playing and classroom instruction.

Table 18: Frequency distribution of Language of Play and Instruction in the Community

Type of school	Province	Response	Frequency	Percent
Control	Central	Yes	6	54.5
		No	5	45.5
		Total	11	100
	Copperbelt	Yes	3	100
IRI	Central	Yes	12	70.6
		No	5	29.4
		Total	17	100
	Copperbelt	Yes	12	85.7
		No	2	14.3
		Total	14	100

5.1.5 Performance by school type and language of Play and Instruction

Learners whose language of Play was reported to be the same as the language of Instruction performed better in IRI schools in both sub tests scoring 30.5% and 72.9% in Literacy and Numeracy respectively than in Control schools where Literacy percentage scores were at 7.2% and 57.7% for Numeracy. Furthermore, IRI school learners whose language of Play was not the language of classroom instruction performed better than those from Control schools.

Learners in IRI schools whose languages of Play and Instruction were the same performed better than those whose language of Play is not the language of Instruction in by scoring 30.5% in English and 72.9% in Numeracy against 21.9% and 68.7% respectively while learners in Control schools whose language of Play differed from the one used in the classroom, performed better than those whose languages of Play and Instruction were the same by achieving percentage scores of 17.4% in Literacy and 63.0% in Numeracy compared to 7.9% and 57.7% respectively.

Table 19: Summary performance by school type and language of play and Instruction

Province	Type of School	<i>Is the language of communication and play in the community the same as the language of instruction in the school</i>		Literacy (29 points)	Numeracy (26 points)	Total Overall (55 points)
Central	Control schools	Yes	Mean	2.3	15.5	17.9
			Percent	8.0	59.7	32.5
		No	Mean	5.0	16.4	21.4
			Percent	17.4	63.0	38.9
	IRI schools	Yes	Mean	4.6	16.9	21.5
			Percent	15.9	65.0	39.1
		No	Mean	5.8	17.7	23.5
			Percent	20.1	68.0	42.7
	Total schools	Yes	Mean	3.8	16.4	20.2
			Percent	13.1	63.2	36.8
		No	Mean	5.6	17.3	22.9
			Percent	19.3	66.5	41.6
Copperbelt	Control schools	Yes	Mean	2.2	14.0	16.2
			Percent	7.7	53.7	29.5
	IRI schools	Yes	Mean	13.0	21.0	34.0
			Percent	45.0	80.8	61.9
		No	Mean	8.2	18.5	26.7
			Percent	28.2	71.3	48.5
	Total schools	Yes	Mean	10.8	19.5	30.4
			Percent	37.3	75.2	55.2
		No	Mean	8.2	18.5	26.7
			Percent	28.2	71.3	48.5
Total	Control schools	Yes	Mean	2.3	15.0	17.3
			Percent	7.9	57.7	31.5
		No	Mean	5.0	16.4	21.4
			Percent	17.4	63.0	38.9
	IRI schools	Yes	Mean	8.8	19.0	27.8
			Percent	30.5	72.9	50.6
		No	Mean	6.3	17.9	24.2
			Percent	21.9	68.7	44.0
	Total schools	Yes	Mean	7.0	17.8	24.8
			Percent	24.1	68.6	45.2
		No	Mean	6.0	17.5	23.5
			Percent	20.8	67.3	42.8

5.1.6 Number of days available for radio lessons

The number of days the radio broadcasts reach the learners is critical to the effective delivery of LTM lessons.

Teachers were asked to state the number of days these lessons were broadcast to learners.

All the teachers in the Control schools in Copperbelt province reported that they received broadcast for all the learning days in the week. Less than half of the Control schools in Central province had radio lessons for all the five days.

In IRI schools, more than half of the schools received lessons for all the five days while less than half of the schools received them for the same number of days.

Table 20: Frequency distribution of the number of days available for radio lessons by school type and province

Type of school	Province	# of days	Frequency	Percent
IRI	Central	All 5 Days	6	35.3
		4 Days	7	41.2
		3 Days	4	23.5
	Copperbelt	All 5 Days	8	57.1
		4 Days	6	42.9

5.1.7 Performance by number of days available for radio lessons by schools type

Learners who received radio broadcast lessons for all the 5 days of the week performed better in both sub tests within their school type. However, the learners from the IRI schools who received the radio broadcasts every day performed better than the ones from the Control in both sub tests.

Furthermore, IRI school learners performed better than the ones from the Control schools regardless of the number of days the received the broadcasts.

Table 21: Summary performance by number of days available for radio lessons by school type

Type of School	<i>About how many days per week do you use the radio lessons?</i>		Literacy [N=29]	Numeracy [N=26]	Overall [N=55]
IRI	All 5 Days (12)	Mean	9.8	19.4	29.2
		Percent	33.7	74.6	53.0
	4 Days (13)	Mean	7.1	17.4	24.5
		Percent	24.6	66.8	44.5
	3 Days (4)	Mean	4.8	19.7	24.5
		Percent	16.6	75.8	44.6
	Total (29)	Mean	8.1	18.6	26.8
		Percent	28.0	71.7	48.6

5.1.8 Conduct of pre- and post-broadcast activities

Pre- and Post-broadcast activities reinforce the learner participation in LTM lessons. Teacher classroom practices include these activities in order to deliver an effective radio lesson.

All the IRI schools in both provinces conducted pre- and post-broadcast activities while 81.8% of the Control schools in Central province and 66.7% of those in the Copperbelt province did the pre- and post broadcast activities.

Table 22: Number of schools that used pre- and post broadcast activities for radio lessons by school type and province

Type of school	Province	# of days	Frequency	Percent
IRI	Central	Yes	17	100
	Copperbelt	Yes	14	100

5.1.9 Performance by pre- and post-broadcast activities for radio lessons by school type and province

In Central province, learners from IRI schools whose teachers conducted pre-and post-broadcast activities performed better than from the Control schools whose teachers did the same with scores of 17.5% and 66.2% against 5.5% and 59.6% in Literacy and Numeracy respectively.

In Copperbelt province, learners from IRI schools whose teachers conducted pre-and post-broadcast activities performed better than from the Control schools whose teachers also conducted the activities with scores of 42.4% and 79.3% against 7.7% and 53.7% in Literacy and Numeracy respectively.

Generally, learners from the Copperbelt province whose teachers conducted pre- and post-broadcast activities performed better than the learners from Central province whose teachers conducted pre- and post-broadcast activities.

Table 23: Summary performance by pre-and post broadcast activities for radio lessons by school type and province

Province	Type of School	<i>Did the teacher use Taonga Market pre broadcast and post broadcast activities</i>		Literacy [N=29]	Numeracy [N=26]	Overall [N=55]
	IRI	Yes	Mean	5.1	17.2	22.3
			Percent	17.5	66.2	40.5
		Total	Mean	5.1	17.2	22.3
			Percent	17.5	66.2	40.5
	IRI	Yes	Mean	12.3	20.6	32.9
			Percent	42.4	79.3	59.8
		Total	Mean	12.3	20.6	32.9
			Percent	42.4	79.3	59.8

6.0 DISCUSSION OF ASSESSMENT RESULTS

IRI learners achieved significantly higher gains than learners in the control group in the areas of Numeracy and Zambian language literacy.

However, there are a number of reasons why there was poor overall performance in literacy among learners from the IRI and Control schools. One of the factors that could contribute to this result is the large class sizes in most schools as teachers found it difficult to give added individual attention to learners with problems in reading and writing skills.

The reason for the slight advantage that learners in IRI schools had over those from the Control schools may be that the radio lessons and accompanying pre- and post-lesson activities might have provide an added advantage for improving writing and reading skills.

It has also been observed that performance for IRI learners has not been affected by class size.

The comparison of performance with respect to the language of Play and classroom instruction between IRI and Control schools seems to suggest that IRI has positive results regardless of whether the languages of Play and Instruction are the same or different.

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APPENDIX A: GRADE 1 LITERACY (CHIBEMBA) TEST, 2007

- Administer Question 1 and Question 2 to the whole group.
- All discussion and questions must be in the local Zambian language.
- Begin by greeting, introducing yourself and passing out the answer sheet for Questions 1 and 2.

Hello, my name is _____. I am very happy to see you today. I am going to ask you to do some writing, just like you do for your teacher. [Pass out the answer sheet for Items 1 and 2.]

TEST QUESTIONS	INSTRUCTIONS FOR TEST ADMINISTRATORS	SCORING RUBRICS	
<p>1. Write any 3 words for something that you see in this picture.</p> <p>umwana, bamayo, impoto, umulilo, umwanakashi, akapuna, ubwali, umwinko, insapato, chitambala, amenso, ukuboko/amaboko, amabwe, amafwesa, imishishi, umutwe, chitenge, akamuti</p>	<p><i>On the answer sheet provided, ask the learners to write any three words of their choice, describing what they see in the picture.</i></p>	Maximum of 6 points (up to 3 points per word)	
		Writes something that is not legible, a nonsense word.	0
		Writes a word that is spelt correctly, but not related to the picture. OR Writes a word that is recognizable, related to the picture, but not spelt correctly.	1
		Writes a word that is related to the picture, and spelt correctly.	2
<p>2. Write this sentence on your paper:</p> <p>Bamayo balenaya ubwali.</p>	<p><i>Show the learners the picture of a woman cooking nsima.</i></p> <p><i>Ask the learners what mother is doing in the picture. You will be listening for the following, or similar sentence:</i></p> <p>Bamayo balenaya ubwali.</p> <p><i>Ask the learners to write the sentence down on their answer sheet and repeat the sentence:</i></p> <p>Bamayo balenaya ubwali.</p>	Maximum of 4 points	
		Writes nothing at all, or writing not legible or readable.	0
		Writes one or two recognizable words which may have spelling errors, but not the full sentence	1
		Writes all the words of the dictated sentence, but with two or more than one spelling error	2
		Writes all the words of the dictated sentence, but with only one spelling error	3
		Writes the dictated sentence fully, correctly and legibly, with no spelling errors	4
<i>(Do not take marks off for errors in punctuation)</i>			

TEST QUESTIONS	SELECTION	INSTRUCTIONS FOR TEST ADMINISTRATORS	SCORING RUBRICS	
3. Read the following words:	umwana bayama motoka seka amataba inkoko inkonde ichipuna	<i>Present words on a flash card and ask the learners to read them.</i> <i>Allow a second chance if necessary.</i>	Maximum of 8 points (1 per word)	
			Is completely wrong, or mumbles something that is not audible.	0
			Starts to read the word, makes the correct sounds but does not read it completely	0.5
			Reads the word correctly	1
4. Now, I would like you to read a story for me. After you read the story, I will ask you some questions. Please read the story aloud.	umulumendo alechapa ifyakufwala imbwa yanwa amenshi umulumendo atamfya imbwa <i>Please do not help the learner read the sentences.</i>	<i>Present the reading text to the individual learner without the item numbers. The sentences should appear on one sheet of paper with each sentence on a separate line. Using the rubric and the scoring grid, score all three sentences as the learner reads aloud.</i> RECORD MARKS FOR THE BEST TWO SENTENCES	Maximum of 8 points (4 per sentence)	
			Not able to read any words at all, or mumbling incomprehensibly	0
			Reads sounds or syllables, but cannot read a complete word	1
			Reads one or more complete words, but cannot read the complete sentence	2
			Reads all of the words of the sentence, but with hesitancy or has to repeat certain words	3
			Reads all words of the sentence fluently	4
5a. Chinshi umulumendo alechita? b. Bushe mulumendo uletamfya imbwa nangu nimbwa iletamfya umulumendo? b. Chinshi calenga umulumendo ukutamfya imbwa?		<i>Place the story card for the learner to see. Ask the questions, one at a time. Allow the learner to look back in the story as many times as he/she needs to.</i> <i>Using the rubric and the scoring grid, score each item as the learner gives answers - ChiBemba translations of the answers provided to the right</i>	Maximum of 3 points (1 for each question)	
			Incoherent or mumbling response, or wrong answer	0
			Correct answers: 5a. Washing clothes 5b. The boy was chasing the dog. 5c. The dog was drinking the water. /The boy was angry with the dog./...	1

- Administer all numeracy questions to one learner at a time, away from other learners.
- Translation into the local Zambian language is allowed on all questions

Now, I am going to ask you some questions. Sometimes I will ask you to just tell me the answer, and other times I will ask you to write your answer down, OK? Now, here is the first question:

QUESTION STEM	INSTRUCTIONS	SCORING RUBRICS
6. Count from 1 to 10 (Penda ukufuma pali 1 ukufikila pali 10)	<i>Allow a second chance if necessary 2 point maximum</i>	<p><u>Items 6 to 11 follow this rubric:</u></p> <p>NR = No Response: The learner has not tried to give an answer. 0 = Non-mastery: The learner has given an answer that is completely incorrect. 1 = Partial Mastery: The learner has given an answer that is partially correct. 2 = Full Mastery: The learner has given an answer that is completely correct.</p>
7. Count in twos from 2 to 10	<i>Say: 2..4..what comes next? You can also provide the description for skip counting. Allow a second chance if necessary 2 points maximum.</i>	
8. Count in twos from 10 to 100	<i>Say: 10...20...what comes next? You can also provide the description for skip counting. Allow a second chance if necessary 2 points maximum</i>	
9. What is the number that comes between 11 and 13? (Njeba nambaala ilipakati ka 11 na 13) What is the number that comes between 16 and 18? (Njeba nambaala ilipakati ka 16 na 18)	<i>Allow a second chance if necessary. One correct answer shows Partial Mastery (1pt.) two correct answers show Full Mastery (2 pt.) 2 points maximum</i>	
10. Write the numbers from 1 to 5 (Lemba amanambala kufuma pa 1 ukufikila pali 5)	<i>Allow a second chance if necessary 2 points maximum</i>	
11. Now write _____ Any number from 12 – 50 that has two different digits. (Do not ask learners to write 22, 33 or 44).	<i>Ask them to write any two-digit numeral from 12 - 50 (inclusive). (Do not ask learners to write 22, 33 or 44). Give a different number each time</i>	

12. Pick a number between 1 and 10. (Learner says number) what is the number that you could add to that you could add to that number to get 11?		<p><i>Have the learner pick a number between 1 and 10 than find the number to add to it that will give the sum 11.</i></p> <p><i>Repeat with different number</i></p> <p><i>2 points maximum</i></p>	<p><i>Items 12 to 15 follow this rubric:</i></p> <p>NR = No Response: The learner has not tried to give an answer.</p> <p>0 = Non-mastery: The learner has given an answer that is completely incorrect.</p> <p>1 = Partial Mastery: The learner has given one correct answer.</p> <p>2 = Full Mastery: The learner has given two correct answers.</p>	
13. Add these numbers:	4+7; 6+8; 7+8; 5+9; 7+5;	<p><i>Present two problems in horizontal orientation on flash cards.</i></p> <p><i>You may use problem more than once, but do not give the same problems to every child.</i></p> <p><i>2 points maximum.</i></p>		
14. Subtract these numbers:	9-4; 7-5; 8-3; 6-1; 9-2; 8-7;	<p><i>Present two problems in horizontal orientation on flash cards.</i></p> <p><i>You may use problem more than once, but do not give the same problems to every child.</i></p> <p><i>2 points maximum.</i></p>		
15. Now, draw a circle. Draw a square		<p><i>Ask the learner to draw two shapes from the selection.</i></p>	<p><i>Maximum of 4 points – 2 points each</i></p>	
			Not able to draw the triangle, or fails to attempt the task	0
			Draws a shape, but not the one that was specified	1
			Draws the specified shape correctly	2
<p>_____ out of 4</p>				

APPENDIX B: GRADE 1 LITERACY (CHITONGA) TEST, 2007

- Administer Question 1 and Question 2 to the whole group.
- All discussion and questions must be in the local Zambian language.
- Begin by greeting, introducing yourself and passing out the answer sheet for Questions 1 and 2.

Hello, my name is _____. I am very happy to see you today. I am going to ask you to do some writing, just like you do for your teacher. *[Pass out the answer sheet for Items 1 and 2.]*

TEST QUESTIONS	INSTRUCTIONS FOR TEST ADMINISTRATORS	SCORING RUBRICS	
<p>1. Write any 3 words for something that you see in this picture.</p> <p>Mwana, baama, mupika, meso, mungo, cuuno, mulilo, insima, mukaintu, mabusu, chitambala, manza/janza, mabbwe, kauno, masusu, mutwe, chitenge, kasumu,</p>	<p><i>On the answer sheet provided, ask the learners to write any three words of their choice, describing what they see in the picture.</i></p>	Maximum of 6 points (up to 3 points per word)	
		Writes something that is not legible, a nonsense word.	0
		Writes a word that is spelt correctly, but not related to the picture. OR Writes a word that is recognizable, related to the picture, but not spelt correctly.	1
		Writes a word that is related to the picture, and spelt correctly.	2
<p>2. Write this sentence on your paper:</p> <p>Baama bajika nsima.</p>	<p><i>Show the learners the picture of a woman cooking nsima.</i></p> <p><i>Ask the learners what mother is doing in the picture. You will be listening for the following, or similar sentence:</i></p> <p>Baama bajika nsima.</p> <p><i>Ask the learners to write the sentence down on their answer sheet and repeat the sentence:</i></p> <p>Baama bajika nsima.</p>	Maximum of 4 points	
		Writes nothing at all, or writing not legible or readable.	0
		Writes one or two recognizable words which may have spelling errors, but not the full sentence	1
		Writes all the words of the dictated sentence, but with two or more than one spelling error	2
		Writes all the words of the dictated sentence, but with only one spelling error	3
		Writes the dictated sentence fully, correctly and legibly, with no spelling errors	4
<i>(Do not take marks off for errors in punctuation)</i>			

TEST QUESTIONS	SELECTION	INSTRUCTIONS FOR TEST ADMINISTRATORS	SCORING RUBRICS	
3. Read the following words:	mwana kulila motoka seka mapopwe boola inkuku cuuno	<i>Present words on a flash card and ask the learners to read them.</i> <i>Allow a second chance if necessary.</i>	Maximum of 8 points (1 per word)	
			Is completely wrong, or mumbles something that is not audible.	0
			Starts to read the word, makes the correct sounds but does not read it completely	0.5
			Reads the word correctly	1
4. Now, I would like you to read a story for me. After you read the story, I will ask you some questions. Please read the story aloud.	musankwa uwasha zisani mubwa wanywa meenda musankwa watanda mubwa <i>Please do not help the learner read the sentences.</i>	<i>Present the reading text to the individual learner without the item numbers. The sentences should appear on one sheet of paper with each sentence on a separate line. Using the rubric and the scoring grid, score all three as the learner reads aloud.</i> RECORD MARKS FOR THE BEST TWO SENTENCES	Maximum of 8 points (4 per sentence)	
			Not able to read any words at all, or mumbling incomprehensibly	0
			Reads sounds or syllables, but cannot read a complete word	1
			Reads one or more complete words, but cannot read the complete sentence	2
			Reads all of the words of the sentence, but with hesitancy or has to repeat certain words	3
			Reads all words of the sentence fluently	4
5a. Ncizi chacita munsakwa? b. Sena mubwa nguwatanda munsakwa na munsakwa nguwatanda mubwa? c. Ncizi capa kuti munsankwa amutande mubwa?		<i>Place the story card for the learner to see. Ask the questions, one at a time. Allow the learner to look back in the story as many times as he/she needs to.</i> <i>Using the rubric and the scoring grid, score each item as the learner gives answers - ChiTonga translations of the answers provided to the right</i>	Maximum of 3 points (1 for each question)	
			Incoherent or mumbling response, or wrong answer	0
			Correct answers: 5a. Washing clothes 5b. The boy was chasing the dog. 5c. The dog was drinking the water. /The boy was angry with the dog./...	1

- Administer all numeracy questions to one learner at a time, away from other learners.
- Translation into the local Zambian language is allowed on all questions

Now, I am going to ask you some questions. Sometimes I will ask you to just tell me the answer, and other times I will ask you to write your answer down, OK? Now, here is the first question:

QUESTION STEM	INSTRUCTIONS	SCORING RUBRICS
1. Count from 1 to 10 (Kobala kuzwa a 1 kusikila a 10)	<i>Allow a second chance if necessary 2 point maximum</i>	<p><i>Items 6 to 11 follow this rubric:</i></p> <p>NR = No Response: The learner has not tried to give an answer. 0 = Non-mastery: The learner has given an answer that is completely incorrect. 1 = Partial Mastery: The learner has given an answer that is partially correct. 2 = Full Mastery: The learner has given an answer that is completely correct.</p>
2. Count in twos from 2 to 10	<i>Say: 2..4..what comes next? You can also provide the description for sip counting. Allow a second chance if necessary 2 points maximum.</i>	
3. Count in twos from 10 to 100	<i>Say: 10...20...what comes next? You can also provide the description for sip counting. Allow a second chance if necessary 2 points maximum</i>	
4. What is the number that comes between 11 and 13? (Ni namba nzi ijanika akati ka 11 a 13)? What is the number that comes between 16 and 18? (Ni namba nzi ijanika akati ka 16 a 18)?	<i>Allow a second chance if necessary. One correct answer shows Partial Mastery (1pt.) two correct answers show Full Mastery (2 pt.) 2 points maximum (Answer: 12, 17)</i>	
5. Write the numbers from 1 to 5 (Lemba manamba kuzwa a 1 kusikila a 5).	<i>Allow a second chance if necessary 2 points maximum</i>	
6. Now write _____ Any number from 12 – 50 that has two different digits. (Do not ask learners to write 22, 33 or 44).	<i>Ask them to write any two-digit numeral from 12 - 50 (inclusive). Give a different number each time</i>	

7. Pick a number between 1 and 10. (Learner says number) what is the number that you could add to that you could add to that number to get 11?		<p><i>Have the learner pick a number between 1 and 10 than find the number to add to it that will give the sum 11.</i></p> <p><i>Repeat with different number</i></p> <p><i>2 points maximum</i></p>	<p><u>Items 12 to 15 follow this rubric:</u></p> <p>NR = No Response: The learner has not tried to give an answer.</p> <p>0 = Non-mastery: The learner has given an answer that is completely incorrect.</p> <p>1 = Partial Mastery: The learner has given one correct answer.</p> <p>2 = Full Mastery: The learner has given two correct answers.</p>	
8. Add these numbers:	4+7; 6+8; 7+8; 5+9; 7+5;	<p><i>Present two problems in horizontal orientation on flash cards.</i></p> <p><i>You may use problem more than once, but do not give the same problems to every child.</i></p> <p><i>2 points maximum.</i></p>		
9. Subtract these numbers:	9-4; 7-5; 8-3; 6-1; 9-2; 8-7;	<p><i>Present two problems in horizontal orientation on flash cards.</i></p> <p><i>You may use problem more than once, but do not give the same problems to every child.</i></p> <p><i>2 points maximum.</i></p>		
10. Now, draw a circle. Draw a square		<p><i>Ask the learner to draw two shapes from the selection.</i></p>	<p>Maximum of 4 points – 2 points each</p>	
			Not able to draw the triangle, or fails to attempt the task	0
			Draws a shape, but not the one that was specified	1
			Draws the specified shape correctly	2
<p>_____ out of 4</p>				

APPENDIX F

Information about sampled learners
In Grade 1 at IRI GRZ schools

District _____

Name of School: _____

Name of Learner	Actual attendance data from register (Look at register with the teacher. Put days attended over possible days, e.g. 100/120)	Attendance High = 100-120 Medium= 80-100 Low =Less than 80 lessons (Rate each pupil's overall attendance together with the teacher)	Sampling Is the learner being tested today? Y = Yes NA = No, Absent NL = No, Low attendance	Zambian Language Ability H = High M = Medium L = Low
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				

Questionnaire for Teachers Using Taonga Market Educational Programmes at Zambian Government Schools



Instructions: This questionnaire collects information about Grade 1 classes in Zambian government schools that are using Taonga Market radio broadcasts.

Please answer all questions. If no information was available or obtained, write "N/A" in the space available for answering the questions.

The respondent for this questionnaire is a Grade 1 teacher who is currently using Taonga Market educational broadcasts in a Government school. Record the answers by circling them or writing down a response.

General Information:

A1. Province and District: _____

A2. Name of school: _____

A3. Name of teacher interviewed: _____

A4. How many Grade 1 children are there in your school?

Number

A5. How many Grade 1 teachers are currently using Taonga Market programmes at the school?

Number

A6. How many were trained to use Taonga Market at the December / January Workshop?

Number

A7. If teacher(s) using Taonga Market are different from the one(s) trained, why is it so?

A8. Who supplied you with the radio?

A9. Do you have a copy of the mentor's guide?

Teacher's Observations:

B1. Is the language of communication and play in the community the same as the language for instruction at Grade 1?

1. Yes 2. No

B2. About how many **days per week** do you use the radio lessons? **(Please circle)**

All 5 days 4 days 3 days 2 days 1 day 0 days

B3. Did teacher(s) who was/were trained to use Taonga Market at the December / January workshop ever miss radio lessons? YES NO

B4. If **YES**, give the number of days missed for each reason (Use 0 to indicate that the reason is not applicable).

Reason for missing radio lessons	NO. of days missed
1. The radio was not available	
2. Could not hear the radio well (poor reception)	
3. Interference by other programming (e.g., Thursday lessons)	
4. Lesson does not fit in schedule every day	
5. Absent due to sickness	
6. Went away for a funeral	
7. Went away for professional studies	
8. Other (please describe)	

B5. Did you (the teacher) use Taonga Market pre broadcast and post broadcast activities regularly?

B6. How useful are the Taonga Market radio broadcasts? *(Circle one answer)*

1. Very useful 2. Useful
 3. Only a little useful 4. Not useful at all

Please explain your answer to B6 above



Learning at Taonga Market (Interactive Radio Instruction)

Guidelines for Test Administrators

in

Grade 1 GRZ Schools

01 October to 19 October 2007

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PART 1: GENERAL INFORMATION

A. Purpose of the Assessment

The purpose of the assessment is to see what the Grade 1 children are learning from the Taonga Market programme. The children will only learn if the school/centre has regular lessons with good radio reception. Therefore, we want to test a learner only when:

- The school/centre receives a good radio signal and the radio was working all year.
- A teacher or mentor was teaching Grade 1 during the whole year
- The learner attended Grade 1 lessons regularly

Before you begin testing, you will need to verify that the school has had good radio reception and that teachers/mentors were holding regular classes. You will also need to select learners who had good attendance.

B. Collecting Information

Information will be collected by testing the learners, and asking the teacher questions. Three instruments are being used:

1. Test of Literacy (Zambian Languages)
2. Test of Numeracy
3. Teacher/mentor questionnaire

Instructions for delivering the tests are given in the test. Instructions for collecting information from the teacher or mentor are in this booklet.

PART 2: TASKS TO COMPLETE BEFORE TRAVELLING

A. Select the list of schools

Following is the list of schools where testing will take place, by province and district. These are 'roll-out' schools. As far as possible government schools that were part of the pilot sample are to be avoided. The total number of schools to be tested is 48. For each district, at least 3 alternate schools are included. These are schools that will replace the ones in the original sample, should the need arise.

CENTRAL PROVINCE

District	IRI/Control	School
Serenje	GRZ IRI Schools	Kanona Basic
		Mulilima Basic
		Mabonde Basic
		Chipaata Basic
		Chibale Basic
		Musamani Basic
		Chief Serenje Basic
		Katonga Basic
		Muchinka Basic
		Mpelembe Basic
		Mupepetwe Basic (Alternate)
		Muchinda Basic (Alternate)
	GRZ Control Schools	Reuben Basic
		Mukopa Basic
Milulu Basic		
Miswema Basic		
Nsomaulwa Basic		
Kalela Basic (Alternate)		
Chibombo	IRI Schools	Lukata Basic
		Kapila Basic
		Kayosha Basic
		Kamaila Basic
		Shampande Basic
		Chiyuni Basic
		Musoka Basic
		Mwayasunka Basic
		Kanakantapa Basic
		Mutakwa Basic (Alternate)
		Momboshi Basic (Alternate)
	Control Schools	Katuba Basic
		Mututu Basic
		Kizito Basic
		Chunga Basic
		Chitebulo Basic (Alternate)
Mukalashi Basic (Alternate)		

COPPERBELT PROVINCE

District	IRI/Control	School
Masaiti	GRZ IRI Schools	Chamunda Basic
		Lumano Basic
		Fiwale Basic
		Kamifungo Basic (Alternate)
		Miria Mokola (Alternate)
	GRZ Control Schools	Saka Middle Basic
		Lubendo Basic
		Katuba Middle Basic (Alternate)
Mufulira/ Luanshya	GRZ IRI Schools	Chibolya Basic
		Central Basic
		Mufulira Mine Basic
		Murundu Basic
		Mukambo Basic
		Kalanga Basic
		Luansobe Basic
		Kasumba Basic
		Kafironda Basic
		Eastley Basic
		Mupambe Basic (Alternate)
		Kamchanga Basic (Alternate)
		Kansuswa Basic (Alternate)
		Butondo Basic (Alternate)
		Kankoyo Basic (Alternate)
	GRZ Control Schools	Twasekela Basic
		Mufulira Basic
		Minambe Basic
		Lima Middle Basic
		Mupena Basic
		Makole Basic (Alternate)
		Mano Basic (Alternate)

The total numbers of Grade 1 learners that should be tested are as follows:

PROVINCE	PROVINCE	Number of learners to be tested
Central	Serenje	300
	Chibombo	260
Copperbelt	Masaiti	100
	Mufulira/Luanshya	300
Total		960

Your goal is to test the total number of learners for your province. If you test 20 learners at each of the assigned centres/schools, you should reach the goal. If you are unable to test 20 learners at some of the centres/schools, you can test more learners at other centres/schools or go to additional centres/schools.

Only centres/schools that have good radio reception should be tested. The selection of the additional centres/schools has been done mainly because of previously reported good radio reception. If the teacher/mentor at a centre/school reports that radio reception has not been good during the year, use the alternate school, or find another but similar centre/school. For example, if the selected centre/school was an IRI centre in a rural area in a district, it should be replaced with an IRI centre in a rural area preferably in the same district.

B. Make a Travel Plan

The SEO and the POC should make a travel plan using the following calendar and the lists of schools/centres.

Monday	Tuesday	Wednesday	Thursday	Friday
01 October	02 October	03 October	04 October	05 October
08 October	09 October	10 October	11 October	12 October
15 October	16 October	17 October	18 October	19 October

C. Check the Budget

The budget covers the following expenses:

- Subsistence allowances for evenings spent away from the home station
- Juice, cups and bread for the Grade 1 learners being tested
- Fuel

The money will be deposited directly in the POCs' accounts. The POCs should collect the funds from the bank on the Saturday before testing. The POCs are in charge of using the funds appropriately and collecting receipts. An extra day of subsistence is provided to the POCs so they can travel to Lusaka and retire the funds and submit testing information on Friday, 19 October.

D. Create Flash Cards for Zambian Language Literacy and Numeracy

For Grade 1 Only: Flash cards are to be made for the following items:

- Item 3: Reading words on flash cards
- Item 4 & 5: A passage, for reading and reading comprehension
- Item 13: Addition problems, to be presented on a flash card
- Item 14: Subtraction problems, to be presented on a flash card

E. Train Additional Test Administrators If Necessary

Each team has two members for Grade 1, and four members for Grade 4. If any of the members do not have experience testing, then they need to be trained. Do the training in the following manner:

1. Before going in the field, administer the test to the trainee.
2. Have the trainee administer the test to you.
3. In the field, have the trainee observe an experienced member of the team give the test to several learners.
4. Observe the trainee administering the test to a learner. Give any feedback to the trainee if necessary.

It is important that the learners be tested in the same manner in all provinces. If you have any questions about procedures, feel free to call Jasper Hatwinda (0-977-756-545).

F. Receive and Check Test Materials

Testing teams will collect the items needed for testing from the Education Development Centre office on Friday, 28 October. This is a checklist of items that each team should have:

- A copy of the official introductory letter about the testing, from DODE to the school.
- Copies of this planning document—one for each team member.
- Copies of the test booklet, entitled *2007 Grade 1 Assessment Of Literacy and Numeracy*,—one copy for each team member.
- Copies of the scoring grids for Zambian language literacy and numeracy —one for each centre/school and four extras.
- Copies of the Task 1 & 2 answer sheets—enough for students at each of the centres/schools.
- Flash cards for literacy and numeracy questions.
- A marker for writing on the flash cards.
- Chibemba and ChiTonga translations of questions. Note: you can adapt these translations according to the words commonly used during play at the centre/school where you are testing.
- Plastic folders—one for each team member.
- One red, white and blue carry bag for the team materials.
- Pencils—enough for learners at each of the 48 schools.
- A pencil sharpener
- A box of chalk.
- The budget for your team.
- Money—enough to cover the budget
- Blank QUESTT official receipts—one for each member of the team
- Please Note: Each team will need to provide its own copy of the *Grade One Mentor's Guide* as well as a chalk slate for administering certain questions.

PART 3: TASKS TO COMPLETE DURING TESTING

A. Purchase Bread and Juice for the Learners

Purchase enough bread, juice and cups for the Grade 1 learners. Give the bread and juice to the learners during a break in the test. Ask the learners to stay, and make sure that the learners know they should stay to continue testing.

B. Decide Whether to Test at the Centre or Go to Another Centre

You might not test at every centre/school that you visit. You will only test centres/schools with good radio reception and where learners missed no more than five weeks of lessons. Once you arrive at a centre/school, greet the head and the Grade teacher. Then ask the head and the Grade teacher the following questions:

1. Have you had good radio reception all year?

If the answer is NO, do not test at this centre. If YES, go to the next question.

2. How many weeks were the Grade 1/4 learners **NOT** taught?
0-1 week 2-3 weeks 4-5 weeks More than 5 weeks

If the answer is **More than 5 weeks**, do not test at this centre. If the answer is between 0-5 weeks, then test at the centre.

C. Check attendance of learners

With the teacher/mentor, look at the attendance register to see if each learner had or High, Medium or Low attendance. **Learners who have Low attendance should not be tested.**

The testing will start after lesson 125. For this testing, attendance is rated as follows:

High = Attendance at 80-100% of the lessons: about 100 lessons or more

Medium = Attendance at 60-79% of the lessons: about 75-99 lessons

Low = Attendance at less than 60% of the lessons: less than about 75 lessons

After rating the attendance of the learners, you will be ready to do sampling.

D. Sampling Learners: Who do we choose for testing?

Select learners to be tested using the description below:

11. Examine the attendance register of Grade 1 learners at the centre and designate them as High, Medium or Low.
12. Select a random sample of 20 learners from those with High attendance.
13. If need be, select those with medium attendance to make up the number of 20 per school.
14. The test administrator chooses the rest of the learners from the register. Choose only those with High or Medium attendance. Choose some from the top, the middle and the bottom of the register.
15. Write the name of the added learners and fill in the columns on attendance and sampling.

Note: Do not let the teacher or mentor choose the learners. The teacher or mentor might choose only the best learners. We need to randomly choose any learner with High or Medium attendance.

D. Help the Grade Teacher/mentor fill in the questionnaire

One of the test administrators should help the mentor fill in the Teacher/mentor Questionnaire.

E. Test Grade 1 and Grade 4 Learners

- **Grade 1** learners in GRZ schools are tested in Numeracy and Literacy. Literacy tests are in Zambian languages, ChiBemba in the case of Masaiti, Mufulira and Serenje, and Chitonga in Chibombo. Follow the instructions in the testing booklet when testing.

PART 4: TASKS TO COMPLETE AFTER TESTING

A. Score the Writing from the Zambian Language Test

Before scoring the sentences about mother washing clothes, review the two rubrics: the Rubric for Task 1 and the Rubric for Task 2. Score the learners' sentences and write the score on the answer sheet for the literacy test.

B. Collect All Forms and Check Information

Before leaving the centre/school, verify that all forms are filled in completely:

- Scoring grid for the Test of Literacy (Zambian Language)
- Copies of the Answer Sheet for literacy tasks
- Copies of the Answer Sheet for numeracy tasks
- Scoring grid for the Test of Numeracy
- Teacher/mentor Questionnaire

Place all the forms together in a folder.

C. Submit Test Information and Retire Funds

The POCs should submit test information and retire the funds on Friday, 19 October. Be ready to submit:

- Completed scoring grids for the tests of Literacy (Zambian Language), Numeracy and English Language
- All answer sheets for Questions 1 & 2
- Completed Mentor Questionnaires
- All copies of the tests used by test administrators
- Receipts for fuel payments
- Receipts for allowance payments
- Receipts for purchases of juice, cups and bread
- Any remaining funds