Learning at Taonga Market at Grade 2:

An Evaluation of Interactive Radio Instruction In GRZ Schools in 2008

QUESTT M&E

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ABBREVIATIONS AND ACRONYMS

DODE..... Directorate of Open and Distance Education
EBS .....Educational Broadcasting Services
EDC.....Education Development Centre
GRZ..... Government of the Republic of Zambia
IRI .....Interactive Radio Instruction
LTM..... Learning at Taonga Market
MOE.....Ministry of Education
POC..... Provincial Outreach Coordinator
QUESTT.....Quality Education Services Through Technology
SEO-ODL.....Senior Education Officer-Open and Distance Learning

1.0 INTRODUCTION

1.1 Background

Learning at Taonga Market, the Ministry of Education's IRI program in Zambia, was based on the acceptance that Education For All goals could not be met through conventional schools alone, and that a complementary delivery system using radio and community-based and supported learning centres was needed to deliver the Zambian basic education curriculum. Interactive Radio Instruction (IRI) is a teaching methodology in which a radio broadcast guides a teacher and learners through the activities of a lesson. While listening to the radio, learners actively participate in the lesson by singing, reading, writing, answering questions and solving problems in ways that ensure active learning. Learning at Taonga Market lessons are written and recorded by Educational Broadcasting Services (EBS) of the Directorate of Open and Distance Education (DODE) of the Ministry of Education (MOE) in collaboration with the USAID-funded QUESTT Project, managed by the Education Development Center. 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 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.

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.

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. 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.

IRI learners achieved significantly higher gains than learners in the control group in the areas of Numeracy and Zambian language literacy. The summary findings were;

- 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 scaled up LTM to GRZ schools throughout Zambia for January 2008 for Grade 2 learners. With this new policy intervention to roll-out IRI to GRZ schools, the number of GRZ learners using IRI grew dramatically

Given the importance of ensuring quality of LTM and given that IRI was evaluated at Grade 1 in 2007, it was decided that IRI should be evaluated at Grade 2 in 2008. It asks the same questions as the 2007 evaluation of Grade 1: whether there is demand for LTM, who the learners are, whether they attend radio lessons and whether they are learning. A sample of learners was tested at the end of the year in GRZ schools. The performance of learners who were using IRI was compared with the performance of control groups, consisting of learners from GRZ schools that were not using IRI. Teachers were interviewed to learn about environmental factors other than IRI that may have had an impact on learning. This report describes the results of the interviews and the testing.

The Ministry of Education developed the Primary Reading Programme to help children learn to read in both a Zambian language and English. As part of the Primary Reading Programme, the New Breakthrough To Literacy (NBTL) programme was developed to teach learners to read and write in a familiar Zambian language during Grade 1. In addition, the Step In To English Literacy Course (SITE) was designed to enable learners to read and write fluently in English. By January 2004 both NBTL and SITE were being used in all government primary schools.

SITE was designed to help learners build on the foundation of oral English study in Grade 1 along with the literacy skills developed through NBTL. SITE uses the same teaching methodology as NBTL to teach English reading and writing skills. Grade 2 IRI lessons have adapted the SITE methodology for teaching English in the same way that NBTL was adapted to the radio. Techniques such as a focus on phonics and the language experience approach are used to provide learners with practice at reading and writing English.

It should be noted that the purpose of introducing IRI into GRZ schools is to supplement NBTL and SITE—not replace them. GRZ teachers are encouraged to continue using NBTL and SITE methodologies during their initial training in IRI and during monitoring. It is also important to understand these differences in implementation as they could offer insight into how IRI could be adjusted to better provide for the needs of learners in GRZ schools.

1.2 Purpose of the Evaluation

The overall goal of this evaluation is to document the effectiveness of IRI at Grade 2 in GRZ schools with a view of investigating consistencies in the learning gains recorded in earlier evaluations as well as the extent of influence of other factors during the implementation of LTM. The evaluation questions are as follows:

1. What is the level of demand for IRI in GRZ schools?
2. What are the characteristics of the children who participate in IRI?
3. How frequently do learners attend daily broadcasts?
4. Are learners achieving English language, and mathematics skills as expected at Grade 2 level?
5. Are learners achieving functional literacy skills in a Zambian language?

2.0 EVALUATION METHODOLOGY

2.1 Sampling Design

Designing of the IRI Evaluation sampling plan was conducted by QUESTT in coordination with the Testing Committee.

The 2008 IRI evaluation used a post-test model that was used in the evaluation of 2006. Taking the above into consideration, the same sampling procedure that was used in 2007, was applied to select the Grade 2 learners to be tested in the 2008 IRI Evaluation. The selection included Central, Copperbelt, Western and Southern provinces. Two districts from each province were sampled and these were Mumbwa and Serenje from Central province, Kalulushi and Mpongwe from Copperbelt province, Choma and Kazungula from Southern province and Kalabo and Kaoma from Western province.

Out of 777 IRI schools[1] in the four provinces, 38 schools were targeted in the sample design. Another 18 non-IRI Community schools were included in the sample. The number of IRI schools for testing was in-turn determined proportionally for each province. Table 1 indicates the number of GRZ schools, IRI and Control, targeted and tested.

Table 1: Number of schools in 2008 sampling plan

Province	Targeted GRZ schools	Tested IRI GRZ Schools	Tested control schools
Central	14	10	4
Copper belt	12	8	4
Southern	18	12	6
Western	12	8	4
Total	**56**	**38**	**18**

In the second level of sampling, non-IRI learners were selected proportionally from each province using a random sampling of 50% of the total IRI learners. IRI learners were selected from a population of 56, 822[2] that were registered in GRZ schools in 2007. The table below indicates the number of learners targeted and tested.

Table 2: Number of GRZ learners targeted and tested

Province	Targeted sampled GRZ learners			Tested IRI GRZ learners		
	IRI	Control	Total	IRI	Control	Total
Central	200	80	280	259	20	279
Copper belt	160	80	240	160	60	220
Southern	240	120	360	215	80	295
Western	160	80	240	164	77	241
Total	**760**	**360**	**1,120**	**798**	**237**	**1.035**

At the third level of sampling, for each class tested, equal number of boys and girls were selected. However the number of boys and girls were to be selected randomly from the register using an appropriate interval until the required number of boys and girls had been selected.

[1] *Ministry of Education, 2007 EMIS data*
[2] *Ministry of Education, 2007 EMIS data*

The table below shows the number of the tested learners, by province and gender.

Table 3: Number of learners tested, by province and gender

Province	Sex of learner		Total
	Male	Female	
Central	142	137	279
Copperbelt	109	111	220
Southern	136	159	295
Western	107	134	241
Total	**494**	**541**	**1,035**

More purposive sampling was conducted during test administration. The Test administrators were instructed to administer the test at IRI schools that had good radio reception throughout the year and to select learners who had high or medium attendance.

A total of 150 radio lessons are broadcast during the year. Attendance was rated high if, of a possible 150, learners attended 120 or more radio lessons, medium if learners attended between 90 to 119 lessons, or low for less than 90 lessons.

The assessment for the Grade 2 learner performance was based on the following premises;

- QUESTT already had available a draft Grade 2 assessment instrument that was used in 2006 and that it could be used without making any changes to it thus giving time to collect information for the 2008 school year, and
- To investigate efficiency in the delivery of the LTM methodology after it has been introduced at the second grade of basic education in GRZ schools.

The Committee adopted the 2006 Grade 2 test instruments and reproduced it for administration. Table 9 below shows the skills covered in each subtest and the points allocated.

Table 4: Subtest skill areas and point values

Mathematics [13 points]		**Zambian Language Literacy [36 points]**	
• Addition	4	• Writing Words	10
• Subtraction	3	• Writing a sentence from scrambled words	3
• Multiplication	2	• Writing a sentence from dictation	3
• Division	1	• Free writing	3
• Money	1	• Reading aloud	12
• Length	1	• Reading comprehension	5
• Size	1		
• Time	1		
Life Skills [8 points]		**English Language [29 points]**	
• Problem solving	2	• Naming jobs	5
• Gender roles	3	• Describing activities	6
• Learner's roles	3	• Reading words	4
		• Reading sentences	4
		• Writing words	10

The final version of the Grade 2 assessment is presented in Appendix A.

2.1.1 Live Test Administration

Test administrators consisted of educators from each of the four provinces acting as test administrators, comprising POCs and SEOs-ODL from DODE. Test administrators were trained from 1st to 3rd October 2008 at a workshop, at Chrismar Hotel in Lusaka, where they reviewed guidelines for sampling learners, administering the tests and interviewing teachers. After reading each section of the test, administrators were given time to practise administering the test to each other. All translations for the Zambian language literacy section were provided in printed form to ensure that the items were presented to learners in large, neat print. Translations were provided in Icibemba, Silozi and Tonga to cater for learners in the tested areas.

The evaluation of learners in GRZ Schools began on 6th October and ended on 17th October. Each team of test administrators consisted of two members. Four teams were involved in the testing at GRZ schools. Each team had a team leader who was in charge of ensuring quality control, compiling results and submitting reports. Reports contained information about where testing was done and any problems with test administration. Each team submitted all test results and teacher questionnaires. Test administration proceeded smoothly with no problems that would invalidate the results of any school.

3.0 FINDINGS AND DISCUSSION

3.1 What is the level of 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.

The numbers of IRI learners continue to grow now that IRI has been introduced at Grade 2 level. While there were a total of 203,489 Grade 1 learners in 2007, the number doubled to 407,295 in 2008 with the inclusion of the Grade 2 learners. The table below shows the Grade 1 and 2 learner populations in GRZ schools for 2008.[3]

Table 5: Total number of learners in IRI GRZ schools

Province	Number of IRI GRZ schools	Male	Female	Total Learners
Central	353	25,307	25,217	50,524
Copperbelt	225	25,752	25,869	51,621
Eastern	460	30,883	32,669	63,552
Luapula	173	14,809	14,378	29,187
Lusaka	142	18,289	18,476	36,765
North Western	255	14,703	14,903	29,606
Northern	518	32,749	32,524	65,273
Southern	409	26,307	26,101	52,408
Western	223	14,226	14,133	28,359
Total	**2,758**	**203,025**	**204,270**	**407,295**

3.2 Profile of GRZ Schools

3.2.1 Gender and age of learners

Girls are systematically being encouraged to participate in learning opportunities in most developing countries, hence the need to disaggregate enrolment by gender in order to determine whether or not there is equal participation of boys and girls. Table 5 shows that 50.2% of the learners were girls, while 49.8% were boys in 2008.

3.3 Attendance

Learners are expected to attend lessons each day throughout the school year. Each term consists of 50 radio lessons, making a total of 150 lessons during the year. The sample design required test administrators to select learners with Medium and High attendance. Learners with low attendance were selected only when there were not enough learners with Medium and High attendance. The reason for selecting more learners with High and Medium attendance was to target those children who could have benefited from attending LTM lessons so that the effect of the programme could be assessed. The following table shows the attendance of learners by province and sex.

[3] *Ministry of Education, 2008 EMIS data*

Table 6: Grade 2 Percent Attendance by Province and Sex

Province	Sex	Attendance Rating				Total
		High (80% and above)	Medium (60% to 79%)	Low (59% or less)	Missing	
Central	Male	34	34	32	42	142
	Female	41	29	30	37	137
	Total	**75 (27%)**	**63 (23%)**	**62 (22%)**	**79 (28%)**	**279**
Copperbelt	Male	11	33	12	55	111
	Female	13	17	10	69	109
	Total	**24 (11%)**	**50 (23%)**	**22 (10%)**	**124 (56%)**	**220**
Southern	Male	61	18	40	17	136
	Female	61	28	47	23	159
	Total	**122 (41%)**	**46 (16%)**	**87 (29%)**	**40 (14%)**	**295**
Western	Male	40	41	26	0	107
	Female	51	59	24	0	134
	Total	**91 (38%)**	**100 (41%)**	**50 (21%)**	**0**	**241**
All Provinces	Male	**146**	**126**	**110**	**114**	**496**
	Female	**166**	**133**	**111**	**129**	**539**
	Total	**312 (30%)**	**259 (25%)**	**221 (21%)**	**243 (23%)**	**1,035**

Looking at the totals for each attendance rating Table 6, we can see that 30 percent of the learners had High attendance and 25 percent had Medium attendance, while 21 percent had Low attendance.

3.4 Performance in Maths, Zambian Language, Life Skills & English

This section examines Grade 2 learners' performance in the areas of Mathematics, Zambian Language Literacy, Life Skills and English. The section is divided into three parts. The first part looks at the results for all learners. The second and third sections examine the impact of environmental factors on learner performance.

3.4.1 Overall and subtest performance

The Grade 2 assessment consisted of four subtests worth different point values. The complete assessment, consisting of 37 items and scoring rubrics, is presented in Appendix A. The Mathematics subtest was worth 13 points, Zambian Language Literacy was worth 36 points, Life Skills was worth 8 points and English Language was worth 29 points for a total of 86 points. Table 7 presents the mean scores for the overall test and for the subtest for all learners—those using IRI as well as those in control schools.

Table 7: Mean Scores for the overall test for all learners, by subtests

Province		Maths [13 points]	Zambian Language [36 points]	Life Skills [8 points]	English Language [29 points]	Overall Test [86 points]
Central [N=279]	Mean	7.2	8.1	2.3	12.2	31.1
	Percent	**55.45%**	**22.37%**	**28.76%**	**41.90%**	**36.37%**
Copperbelt [N=220]	Mean	7.4	11.9	4.8	11.4	33.9
	Percent	**56.85%**	**33.14%**	**59.49%**	**39.22%**	**39.41%**
Southern [N=295]	Mean	6.6	8.8	3.5	8.9	27.5
	Percent	**50.93%**	**24.41%**	**43.43%**	**30.85%**	**31.95%**
Western [N=241]	Mean	7.7	16.0	3.1	10.5	37.3
	Percent	**58.92%**	**44.35%**	**39.22%**	**36.14%**	**43.34%**
Total [N=1,035]	Mean	7.2	11.2	3.4	10.7	32.5
	Percent	**55.57%**	**31.10%**	**42.69%**	**37.00%**	**37.78%**

In general, the overall test scores tend to correspond with the levels of attendance. The mean score for all learners on the overall test was 37.8 percent. Western Province, which had the best attendance, had an overall test score of 43.3 percent, which was above the total mean of 37.8 percent. Southern Province, which had attendance that was slightly above average, had an Overall Test score of 32 percent, which was slightly below average. Copperbelt Province, which had below average attendance, had an Overall Test score of 39.4 percent, which was above the total mean. Central province, which had attendance that was slightly below average, had an overall test score of 35.5 percent, which was well below the mean.
Western province performed significantly better than the rest of the province in Maths while Southern province better in Life Skills. The results for the other two sub tests were not statistically significant.[4]

Table 8 presents the mean scores for each test section and for the overall test by the type of school. The results for schools that were using IRI are highlighted.

Table 8: Mean Scores for the Overall Test for all Learners by School Type (in percent)

Type of school		Maths [13 points]	Zambian Language [36 points]	Life Skills [8 points]	English Language [29 points]	Overall Test [86 points]
IRI GRZ Schools	Mean	7.4	10.7	3.4	11.1	32.8
	Percent	**57.09%**	**29.81%**	**42.08%**	**38.14%**	**38.15%**
Control GRZ Schools	Mean	6.4	11.6	3.3	9.4	29.9
	Percent	**49.11%**	**32.22%**	**41.35%**	**32.46%**	**34.80%**

Learners who used IRI performed better than the control group in Maths and English, while IRI learners and control learners performed similarly in Zambian Language

[4].Analysis of variance deduced that the differences in Maths and Life Skills among provinces are significant. The variation between groups is much higher than the variation within factor groups, with F being higher at 1034 degrees of freedom and the probability of the null hypothesis less than 1.

Literacy. In the area of Life Skills—the IRI and control learners at Grade 2 also had similar performance.[5]

The next sections will look at factors that may have contributed to these results.

3.4.2 Effects of environmental factors on performance in GRZ Schools

This section looks at the environmental factors that may have had an impact on the performance of learners at GRZ schools. First of all, the effect of learning materials will be discussed. Secondly, the impact of several learner characteristics (gender, age and attendance) will be examined. Next, this section will look at how learners' performance was affected by the teacher's years of experience, time spent on pre-broadcast activities and assistance with school work at home. Finally, this section will examine whether learners who were not being taught Zambian Language Literacy in their language of play performed as well as learners whose language of play was the same as the language of instruction.

To see how comparable the IRI and control schools were in terms of resources, information was collected about whether each school had enough materials to use during the third term. Table 9 shows the number and percentage of schools that had enough of each type of material during the third term.

Table 9: Learning materials in GRZ schools

Materials	**IRI GRZ Schools** [N=38]	**Control GRZ Schools** [N=13]
Chalk	34(89.5%)	11(84.6%)
Pencils	27(71.1%)	11(84.6%)
Exercise books	24(63.2%)	9(69.2%)

The IRI and control schools tended to be equally well equipped with chalk, pencils and exercise books. This suggests that the higher performance of the IRI schools cannot be attributed to greater availability of resources.
While the availability of learning materials did not have an effect on results, several learner characteristics did. Table 10 shows results for GRZ learners by gender.

[5] The differences in Maths and English are significant because the observed (calculated) t values are both greater than the critical value of 1.96 at 95% 1033 degrees of freedom and 95% significance level. However, the differences for Life Skills and Zambian Language are not significant because calculated t is less than the critical at the same significance level and degrees of level.

Table 10: Mean scores for GRZ Learners, by subtest and gender

Type of School	Sex of learner		Maths [13 pts]	Zambian Language [36 pts]	Life Skills [8 pts]	English Language [29 pts]	Overall [86 pts]
IRI GRZ Learners	Male	Mean	7.6	10.6	3.6	10.9	32.7
		Percent	**58.7%**	**29.4%**	**44.7%**	**37.6%**	**38.0%**
	Female	Mean	7.2	10.9	3.2	11.2	32.9
		Percent	**55.6%**	**30.2%**	**39.6%**	**38.6%**	**38.3%**
Control GRZ Learners	Male	Mean	**6.6**	**11.9**	**3.2**	**9.3**	**30.4**
		Percent	**50.9%**	**33.1%**	**39.6%**	**32.1%**	**35.4%**
	Female	Mean	6.2	11.3	3.4	9.5	29.5
		Percent	**47.6%**	**31.5%**	**42.8%**	**32.8%**	**34.3%**
Total GRZ Learners	Male	Mean	7.4	10.9	3.5	10.6	32.2
		Percent	**57.0%**	**30.2%**	**43.6%**	**36.4%**	**37.4%**
	Female	Mean	7.0	11.0	3.2	10.8	32.1
		Percent	**53.7%**	**30.5%**	**40.4%**	**37.2%**	**37.3%**

The Grade 2 results show a difference in performance between girls and boys using IRI with boys performing better in Mathematics and Life skills. On the other hand, in the control schools, girls performed slightly better in Life Skills and English Language, while boys performed slightly better in Maths and Zambian Language. The differences in performance in control schools cancelled each other out, yielding a similar overall test scores for girls and boys.
The difference in the overall performance between boys and girls within the IRI schools and Control schools were not statistically significant.[6]

Table 11 shows a further breakdown of the results for the 798 girls and boys who used IRI according to their age.

[6] For IRI schools, with the observed t value at 0.1802 (less than critical t=1.96) at 95% confidence interval and 796 degrees of freedom, the differences were not significant.
For Control schools, with the observed t value at 0.3441 (less than critical t value of 1.96) and a two-tailed p value of 0.7311 and 235 degrees of freedom, the differences were not significant.
The differences between female learners in different school types-IRI and Control-were not quite statistically significant (calculated t = 1.8831) at 95% significance level and 537 degrees of freedom. The same inference was obtained for male learners between different treatment groups.

Table 11: Mean Scores for Learners in IRI Government Schools by Age Category and Sex

Age Category	Sex of learner		Maths [13 pts]	Zambian Language [36 pts]	Life Skills [8 pts]	English Language [29 pts]	Overall Test [86 pts]
Below 8 years	**Male** [N=39]	Mean	7.56	9.92	3.77	12.74	34.38
		Percent	**58.2%**	**27.6%**	**47.1%**	**43.9%**	**40.0%**
	Female [N=42]	Mean	7.62	11.21	3.29	13.57	36.05
		Percent	**58.6%**	**31.2%**	**41.1%**	**46.8%**	**41.9%**
	Total [N=81]	Mean	7.59	10.59	3.52	13.17	35.25
		Percent	**58.4%**	**29.4%**	**44.0%**	**45.4%**	**41.0%**
8 to 9 years	**Male** [N=313]	Mean	7.23	10.58	3.64	10.34	31.58
		Percent	**55.6%**	**29.4%**	**45.4%**	**35.6%**	**36.7%**
	Female [N=373]	Mean	6.79	10.95	3.42	10.80	32.16
		Percent	**52.2%**	**30.4%**	**42.8%**	**37.2%**	**37.4%**
	Total [N=686]	Mean	6.99	10.78	3.52	10.59	31.90
		Percent	**53.8%**	**29.9%**	**44.0%**	**36.5%**	**37.1%**
10 to 11 years	**Male** [N=113]	Mean	7.81	12.21	3.32	10.43	33.31
		Percent	**60.1%**	**33.9%**	**41.5%**	**36.0%**	**38.7%**
	Female [N=98]	Mean	7.41	11.15	2.70	9.77	30.88
		Percent	**57.0%**	**31.0%**	**33.8%**	**33.7%**	**35.9%**
	Total [N=211]	Mean	7.63	11.72	3.03	10.12	32.18
		Percent	**58.7%**	**32.6%**	**37.9%**	**34.9%**	**37.4%**
12 years and above	**Male** [N=20]	Mean	8.70	13.05	3.30	9.40	33.85
		Percent	**66.9%**	**36.3%**	**41.3%**	**32.4%**	**39.4%**
	Female [N=14]	Mean	8.50	16.29	3.79	9.07	36.07
		Percent	**65.4%**	**45.2%**	**47.3%**	**31.3%**	**41.9%**
	Total [N=34]	Mean	8.62	14.38	3.50	9.26	34.76
		Percent	**66.3%**	**40.0%**	**43.8%**	**31.9%**	**40.4%**
All Ages	**Male** [N=496]	Mean	7.41	10.88	3.48	10.57	32.20
		Percent	**57.0%**	**30.2%**	**43.5%**	**36.4%**	**37.4%**
	Female [N=539]	Mean	6.98	10.98	3.23	10.79	32.10
		Percent	**53.7%**	**30.5%**	**40.4%**	**37.2%**	**37.3%**
	Total [N=1,035]	Mean	7.18	10.93	3.35	10.68	32.15
		Percent	**55.3%**	**30.4%**	**41.9%**	**36.8%**	**37.4%**

Table 11 shows that age had an impact on the performance of the learners. The performance of learners increased with their age though learners who were below the recommended age for Grade 2 (Below 8 years) performed the highest (41 percent).

Furthermore, Table 11 shows that there were differences in performance between girls and boys at all age levels. Learners who were at the target age for Grade 2 (8 to 9 years) had the lowest difference in learning gains (0.7 percentage points) with the boys earning 36.7 percent compared to 37.4 percent for the girls. The difference in learning gains was the greatest for the learners who were between the age of 10 to 11 years. Boys in this age group earned an overall test score that was 38.7 percent higher than girls.

These results indicate that girls who were at the appropriate age for Grade 2 had a better chance of performing at the same level as boys than girls who were above or below the recommended age for Grade 2. [7]
This serves to show the importance of enrolling girls in school at the appropriate age.

Another factor that had an impact on the results was learner attendance.
As shown in Table 12, good attendance had a positive impact on test performance.

Table 12: Mean Scores for Learners in IRI Government Schools by Attendance and sub test

Attendance rating		Maths [13 pts]	Zambian Language [36 pts]	Life Skills [8 pts]	English Language [29 pts]	Overall Test [86 pts]
High (80% and above) [N=312]	Mean	7.7	13.4	3.5	11.4	35.9
	Percent	**58.9%**	**37.3%**	**43.8%**	**39.3%**	**40.8%**
Medium (60% to 79%) [N=259]	Mean	7.6	11.6	3.3	11.3	34.1
	Percent	**58.2%**	**32.3%**	**41.6%**	**39.0%**	**38.7%**
Low (59% or less) [N=221]	Mean	6.4	6.9	2.2	9.0	25.2
	Percent	**49.2%**	**19.0%**	**27.8%**	**30.9%**	**28.6%**
Non Response [N=243]	Mean	6.4	10.7	4.2	9.0	31.6
	Percent	**49.2%**	**29.7%**	**52.5%**	**30.9%**	**35.9%**
Total [N=1,035]	Mean	7.2	10.9	3.3	10.7	32.1
	Percent	**55.3%**	**30.4%**	**41.9%**	**36.8%**	**36.5%**

Scores in all subject areas decreased with declines in attendance. That is, learners with High attendance tended to perform better than those with Medium attendance, who in turn performed better than those with Low attendance with scores of 40.8 percent, 38.7 percent and 28.6 percent respectively. Those learners with better attendance benefited more from the programme. This finding highlights the importance of promoting good attendance.[8]

The gender, age and attendance of learners had an impact on their performance. In addition, several teacher characteristics had an impact on learning achievement. Table 14 shows the learners' test results according to their teachers' years of experience.

[7] Analysis of variance was used since more than two means were being compared.
The observed F values conclude that the differences in mean scores for all learners in different age ranges were statistically significant.
[8] ANOVA infers that the differences in mean sores among learners with different attendance rates are statistically significant at 1034 degrees of freedom and higher positive F values.

Table 14: Mean scores for the overall test by school category and Years of teaching experience

		Less than 5 Year	5 to 9 Years	10 to 14 Years	15 to 19 years or more	20 years or more	No Response	Total
IRI GRZ School [N=366]	Mean	34.68	30.94	40.39	27.72	53.50	26.53	32.81
	Percent	**40.3%**	**36.0%**	**47.0%**	**32.2%**	**62.2%**	**30.8%**	**38.1%**
Control GRZ School [N=120]	Mean	25.0	29.0	0.0	0.0	46.8	28.2	29.9
	Percent	**29.1%**	**33.8%**	**0**	**0**	**54.4%**	**32.7%**	**34.8%**

Teachers with more experience had learners with better performance. For learners in IRI GRZ Schools, the most important factor was to have a teacher who had at least five years of experience. Learners who had a teacher with less than five years of experience had a mean of 40.3 percent, while those with a teacher who had five to nine years of experience had a mean of 36 percent. It is also clear that this threshold was also important in the Control GRZ Schools. However, in both the IRI GRZ Schools and the Control Schools, learners who had a teacher with more than 20 years of experience performed better than learners with teachers who had less than 20 years of experience. These results confirm the notion that experienced teachers are better able to help children learn and indicate that it is important to retain teachers so that their learners can benefit from that experience.

Another factor that had a positive impact on learning achievement was the level of assistance with school work that caregivers provided to children at home. Test administrators were instructed to ask each learner how often someone at home helped them with each subject. Learners were given the choices of responding *"Never", "Only When Stuck", "Sometimes"* or *"Often"*. Table 15 shows the GRZ learners' responses regarding Zambian Language Literacy.

Table 15: Mean Scores for the Zambian Language Literacy Test by school category and Assistance at Home

		Never	Only When Stuck	Sometimes	Often	No response	Total
IRI GRZ School	N	456	61	129	87	65	798
	Mean	9.0	9.8	12.8	17.8	10.0	10.7
	Percent	**25.1%**	**27.2%**	**35.5%**	**49.5%**	**27.8%**	**29.8%**
Control GRZ School	N	155	35	19	27	1	237
	Mean	11.3	12.0	9.9	13.2	32.0	11.6
	Percent	**31.4%**	**33.3%**	**27.6%**	**36.7%**	**88.9%**	**32.2%**

In both the IRI GRZ Schools and the Control Schools, learners who were often helped at home scored far better in Zambian Language Literacy than other children. Those who were helped sometimes and when they were stuck with work performed about the same (ranging from 27.0 to 35.5 percent), which was better than those learners in IRI and

Control Schools who never had help (25.1 and 31.4 percent respectively). Consistent help at home clearly had a positive impact on achievement in Zambian Language Literacy.

Table 16shows the results for English Language.

Table 16: Mean Scores for the English Language Test by school category and Assistance at Home

		Never	Only When Stuck	Sometimes	Often	No response	Total
IRI GRZ School	N	281	97	130	80	210	798
	Mean	9.1	11.5	13.5	14.0	10.9	11.1
	Percent	**31.3%**	**39.8%**	**46.5%**	**48.2%**	**37.5%**	**38.1%**
Control GRZ School	N	77	27	24	4	105	237
	Mean	9.7	10.6	11.3	13.0	8.3	9.4
	Percent	**33.5%**	**36.5%**	**39.1%**	**44.8%**	**28.7%**	**32.5%**

The English Language results for learners who were helped *"Often", "Sometimes",* and *"Only When Stuck"* are ambiguous compared to the Zambian Language Literacy results. Among IRI GRZ learners, those who often received help (48.2 percent) performed better than those who sometimes received help (46.5 percent) and those who were helped only when stuck (39.8 percent). Among the Control School learners, those who were helped often (44.8 percent) performed better than those who were helped sometimes (39.1 percent) and only when stuck (36.5 percent). However, it is evident that learners who received some form of help outperformed those who never received help. Caregiver assistance had a positive impact on English Language results.

Another important comparison to be made from Table 29 is between learners at IRI Schools and Control Schools who never received help. The learners at control schools who never received help at home (33.5 percent) achieved better results than learners at IRI GRZ schools who never received help at home (31.3percent). Although the IRI learners who never received help from caregivers did not perform as well as those who did not receive help in control schools, generally, they were able to obtain better English Language skills than those who were not using IRI. IRI helped mitigate the impact of never receiving help with English Language school work at home.

Table 17 shows the results for Mathematics.

Table 17: Mean Scores for the Mathematics Test by school category and Assistance at Home

		Never	Only When Stuck	Sometimes	Often	No response	Total
IRI GRZ School	N	277	92	147	95	187	798
	Mean	7.0	7.7	7.7	7.8	7.6	7.4
	Percent	**53.5%**	**58.9%**	**59.4%**	**60.2%**	**58.1%**	**57.1%**
Control GRZ School	N	76	40	14	26	81	237
	Mean	5.3	5.8	5.5	6.0	8.0	6.4
	Percent	**40.5%**	**44.8%**	**42.3%**	**46.2%**	**61.4%**	**49.1%**

Among IRI GRZ learners, the results show that there was no much difference in performance those who were helped sometimes (59.4 percent) and only when stuck (58.9 percent) performed similarly, which was better than those who were never helped (53.5 percent). Learners in control schools who were helped often (46.2 percent) performed better than those who were helped sometimes (42.3 percent) and only when stuck (44.8 percent), who in turn performed better than those who were never helped (40.5 percent). For both learners who used IRI and those in control schools, learners who received assistance at home achieved higher results than those who never received help at home.

Looking at learners who did not receive help with mathematics at home, learners who used IRI performed better than learners in control schools. As with the subject of English Language, IRI reduced the impact of receiving no help at home. However, in the subject of mathematics, IRI had an even stronger impact on learners who did not receive help at home: IRI learners who did not receive help at home (53.5 percent) achieved better results than control learners who received help sometimes (42.3 percent), only when stuck (44.8 percent) and often (46.2 percent). That is, IRI learners who did not receive help at home performed better than control learners who received help sometimes, often and those who received help when stuck.

One additional factor that had an impact on results in the Zambian Language Literacy subtest was the language used for instruction. According to NBTL principles, children are supposed to be taught literacy skills in the same language that they speak when playing. The idea is that children should learn to read and write a language that they can already speak and understand; they should not be subjected to the more difficult task of trying to understand the meaning of unfamiliar vocabulary at the same time that they are learning to read and write. There are seven languages of education used in Zambia. Teachers choose the language of instruction by selecting the one that is predominantly used as the language of play in the area or the language that is most similar to the language of play. Individual learners may not use the language of instruction when they play because they are part of a migrant community or because their language of play does not happen to be one of the languages of instruction. Table 18 shows the scores on the Zambian Language Literacy subtest according to whether or not the language of play and instruction are the same.

Table 18: Mean Scores for the Zambian Language Literacy Test by school category and Match between Language of Play and Language of Instruction

		Language of Play & Instruction are Same	**Language of Play & Instruction are Different**	**No Response**	**Total**
IRI GRZ School	Mean	3.3	3.6		3.4
	Percent	**9.1%**	**10.0%**		**9.3%**
Control GRZ School	Mean	3.6	4		2.8
	Percent	**10.0%**	**11.1%**		**7.7%**

Of the 713 learners from GRZ schools who were sampled, 222 (31.1 percent) were not receiving Zambian Language instruction in the language of play. The percentage of learners who were not receiving instruction in the language of play was greater at IRI GRZ Schools (31.1 percent) than at the Control GRZ Schools (15.3 percent). The results

for learners in IRI GRZ Schools who were not receiving instruction in the language of play (10 percent score) were almost the same with those who did receive instruction in the language of play (9.1 percent) with a 0.9 percent difference in performance. Learners in Control GRZ Schools who did not receive instruction in the language of play (11.1 percent) performed about the same as learners who received instruction in the language of play. The results of the IRI learners indicate that IRI instruction has no greater impact on the achievement of literacy skills when the language of instruction is the same as the language of play.

4. CONCLUSIONS

4.1 Summary

4.1.1 Demand for IRI

The demand for IRI continues to increase as evidenced by the growing numbers of schools and learners using the methodology. This increase was prompted by demand for IRI at GRZ schools. The number of learners increased from 203,489 in 2007 to 407,295 in 2008. This growth is due to the rolling out of IRI to Grade 2 in 2008.

The overall 2008 ratio of 50.2% girls and 49.8% boys indicates that IRI continues to provide equal access to learning for girls and boys. However, as the grade level increases, lower percentages of girls are enrolled. This indicates that there is higher attrition among girls than boys. This trend should continue to be monitored and programmes for retaining girls at the middle basic level should be designed and implemented.

4.1.2 Attendance of IRI Learners

Test administrators were generally successful at obtaining attendance data, as data was collected for 76.6 percent of the learners. Administrators were also successful at finding learners with High and Medium attendance: 30 and 25 percent of the learners had High and Medium attendance respectively while 21 percent had Low attendance. This indicates that test administrators were able to follow the sample design successfully. Girls and boys tended to have similar levels of attendance with 29 percent of the girls and 26 percent of the boys having High and Medium attendance.

4.1.3 Achievement of Grade 2 GRZ Learners

The Grade 2 GRZ learners performed much the same as the Grade 1 learners from the 2005 evaluation report. Learners using IRI performed better than learners in control schools in the areas of mathematics and English. IRI and control learners performed similarly in the areas of Zambian Language Literacy and Life Skills. Both IRI and Control GRZ Schools had similar levels of materials, so the difference in performance cannot be attributed to a lack of materials in control schools.

Three learner characteristics had an impact on results: attendance, age and gender. In general, children with higher attendance rates performed better than those with lower attendance, older learners performed better than younger ones and boys performed better than girls. Although low attendance was found to have a negative impact on achievement, learners generally had good attendance, as discussed in section 3.3. The attraction of listening to the radio and participating in learner-centred activities makes IRI lessons attractive to learners, promoting good attendance and achievement.

Four teaching characteristics had an impact on achievement: the teacher's years of experience, time spent on learning activities before the broadcast, the level of assistance with schoolwork at home and the match between the language of play and the language of instruction. First, learners with more experienced teachers had better results than learners with less-experienced teachers. This highlights the need of retaining teachers, especially in rural areas, which tend to suffer from higher rates of attrition as teachers seek employment in urban areas with easier access to amenities. While activities during the radio broadcasts promote learning, children need the opportunity to reinforce those skills by completing activities outside of the broadcast time. Teachers should be

monitored regularly to ensure that they plan and conduct appropriate learning activities according to their schedules. Secondly, learners who received assistance with schoolwork at home achieved better results than those who did not receive assistance. However, IRI mitigated the impact of not receiving assistance at home. This was most evident in the area of mathematics, where IRI learners who received no assistance at home performed better than control learners who received assistance often, sometimes and when they were stuck. It is likely that the learner-centred activities conducted during and outside of broadcast time help compensate for the lack of individual assistance at home.

4.2 Recommendations

A number of suggestions for improvement were made in the discussion of findings.

1. MOE to ensure that instructions in Zambian languages to be delivered in the language of play.

Head teachers should ensure that the lower basic teachers who are responsible for teaching Zambian Language Literacy are proficient in the language and able to model correct reading and writing in the language of play.

2. Parents to be sensitised on the need to enrol children at the recommended age.

As learners grow older, they become more self-conscious of the difference between their age and the age of their classmates, making it harder for them to participate freely in the classroom and benefit from their education. Apparently, this is more of a problem for girls than boys, as the learning gap between girls and boys increased with age. Children, especially girls, should be enrolled in Grade 1 at the age of seven to gain the most benefit from their education.

3. MOE to provide Pre-service college education in IRI to all student teachers.

Learners who had a teacher who was trained in IRI benefited more from the programme. The longest IRI workshops last for five days. It would be useful to provide training in IRI to all new teachers during pre-service education in colleges and other institutions of learning to improve the quality of instruction.

4. Head teachers to design and monitor an After-School Programme where learners can get help with school work.

A practical solution would be to implement an after-school programme where learners who need help with their schoolwork have the opportunity to get assistance from their parents and guardians from home or older learners from other classes.

REFERENCES

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DODE & QUEST'T (2005): *Learning at Taonga Market in Government Schools: An Evaluation of the 2005 Pilot of Interactive Radio Instruction in Grade One*. Lusaka: Directorate of Open and Distance Education, QUEST'T Project and USAID. [Cited as DODE & QUEST'T, 2005, *LTM in GRZ Schools*]

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APPENDICES

Appendix A: 2008 Grade 2 Assessment

2008 GRADE 2 ASSESSMENTS

MATHEMATICS, LITERACY AND ENGLISH LANGUAGE SKILLS

Achievement Tests

Regular Government Schools

6th to 17th October 2008

Instructions

Before the test:

- *Read this information before the test and seek clarification where necessary.*
- *Ask the class teacher to rate each learner's Zambian language ability with the guidance of the "Descriptors for Language Mastery".*
- *Record the names of the pupils in the same order on each of the scoring grids. Record the Zambian language rating of Low, Medium or High on the Zambian Language Literacy scoring grid.*
- *The sample should include 50 percent girls and 50 percent boys.*

During the test:

- *Everything that appears in italics in the test is for the information or direction of the test administrator. Please do not read such words to the learner. Words that are supposed to be read to the learners are NOT in italics.*
- *Each test question may be presented to the learner a maximum of two times.*
- *Administer the test in the following order:*
    1. *Mathematics: Administer all questions as a group. Read each question to the group. Go to the next question when everyone has had time to answer. Translation into the local Zambian language is allowed on all mathematics questions.*
    2. *Literacy: Administer Tasks 1 and 2 as a group. Then administer the other questions to one learner at a time, away from other learners. All questions must be given in the local Zambian language.*
    3. *English Language: Administer all questions to one learner at a time, away from other learners. All questions must be given in English. Translation is not allowed.*
- *To keep the testing time as short as possible, three administrators should deliver the test—one for each section. After the Mathematics and Literacy Tasks 1 and 2 are completed, have the learners go from the literacy administrator to the English language administrator.*
- *Use the scoring grid to record scores. For Mathematics and Literacy Tasks 1 and 2, record the scores after collecting the learners' writing. For questions given individually, record a score as the learner gives a response. Score ranges for each question are shown at the top of each column on the grid. Record NR for No Response.*

- *Before starting the test, test administrators should write the names and information about the sampled learners on the answer sheet for Literacy Tasks 1 and 2 and the scoring grids.*

MATHEMATICS, GRADE 2

My name is _____

I am a girl / boy . I am _____ years old.

1.

$$\begin{array}{r} 215 \\ +\ 311 \\ \hline \end{array}$$

NR	0	1	2

2.

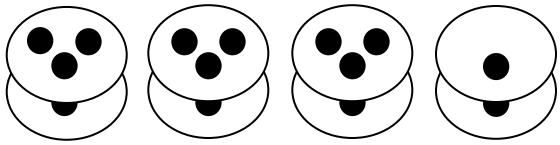
$$\begin{array}{r} 476 \\ +\ 218 \\ \hline \end{array}$$

NR	0	1	2

3.

$$\begin{array}{r} 832 \\ -\ 461 \\ \hline \end{array}$$

NR	0	1	2	3

4. 

is the same as

4 x ☐

NR	0	1

5. 6 birds have 2 legs each. The number of legs altogether is . . .

6 x 2 = ☐ **legs**

5. 6 birds have 2 legs each. The number of legs altogether is . . .

6 x 2 = ☐ **legs**

6. If 4 children share 20 mangoes equally, each child will get . . .

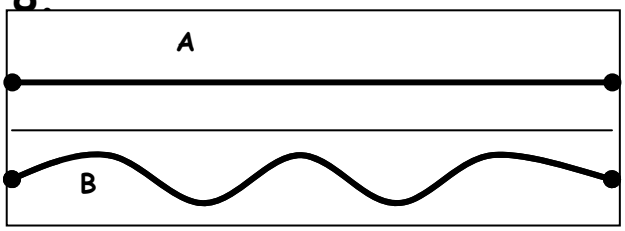
20 ÷ 4 = ☐ **mangoes**

NR	0	1	NR	0	1

7. Betty has K500 and buys one pencil at K100 and one book at K300. How much change does she get?

☐ change

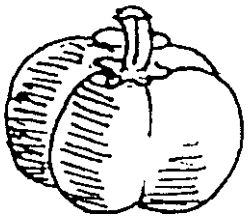
8.

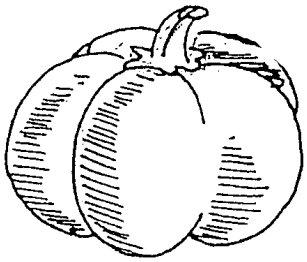


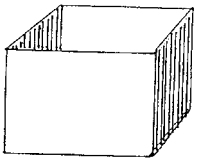
Which line is longer?
Circle A or B.

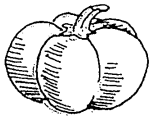
NR	0	1	NR	0	1

9.



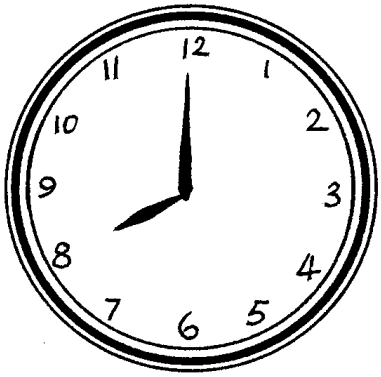






Which pumpkin can go in the box?
Circle the pumpkin that will fit.

10. What time in the morning is the clock showing?



☐ hours

NR	**0**	**1**	**NR**	**0**	**1**

Well done! Thank you for answering the questions.

GRADE 2 – MATHEMATICS TEST SCORING RUBRIC

- *Administer all Mathematics tasks to a group of children.*
- *Ensure that the children write their names properly on the mathematics answer sheets.*
- *Guide the students through each question until they have had enough time to give an answer.*
- *Translation into the local Zambian language is allowed on all questions.*
- *Begin by greeting and introducing yourself, and then allow learners to write their name in the space that has been provided*

My name is _____

I am a girl / boy . I am _____ years old.

1.

$$\begin{array}{r} 215 \\ +\,311 \\ \hline 526 \end{array}$$

1 point if some figures are correct. 2 points for the correct answer.

NR	0	1	2

2.

$$\begin{array}{r} 476 \\ +\,218 \\ \hline 694 \end{array}$$

1 point if some figures are correct. 2 points for the Correct answer.

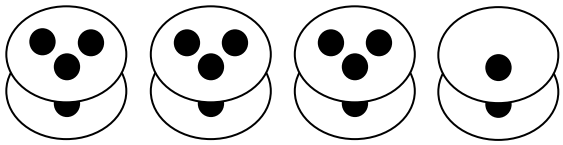
NR	0	1	2

3.

$$\begin{array}{r} 832 \\ -\,461 \\ \hline 371 \end{array}$$

1 if carried correctly only once. 2 points for correct answer.

NR	0	1	2

4. 

is the same as

4 x $\begin{array}{|c|}\hline 3 \\ \hline 3 \\ \hline \end{array}$

NR	0	1

5. 6 Birds have 2 legs each. The number of Legs altogether is …

6 x 2 = $\begin{array}{|c|}\hline 12 \\ \hline 12 \\ \hline \end{array}$

NR	0	1

6. If 4 children share 20 mangoes equally, each child will get…

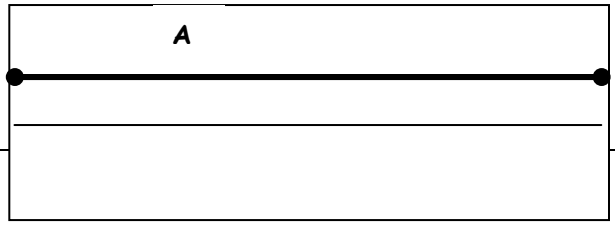
20 ÷ 4 = $\begin{array}{|c|}\hline 5 \\ \hline 5 \\ \hline \end{array}$ **mangoes**

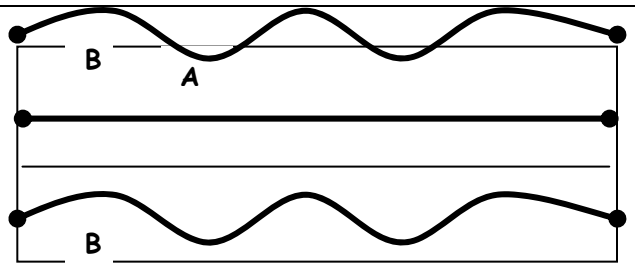
NR	0	1

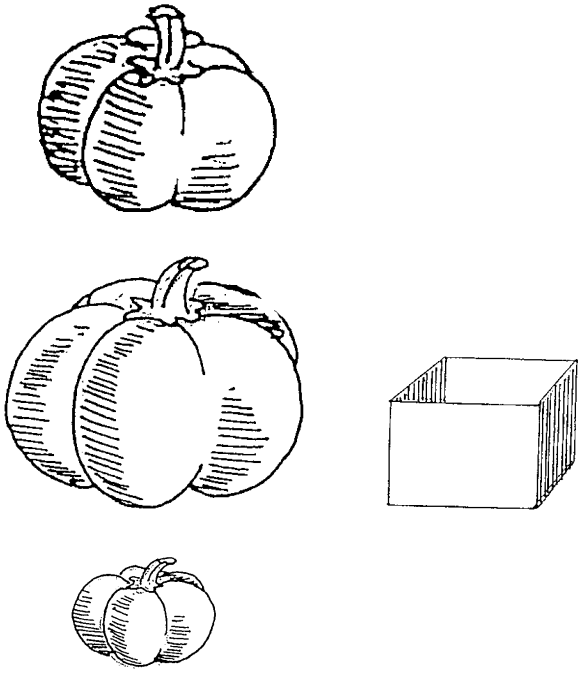
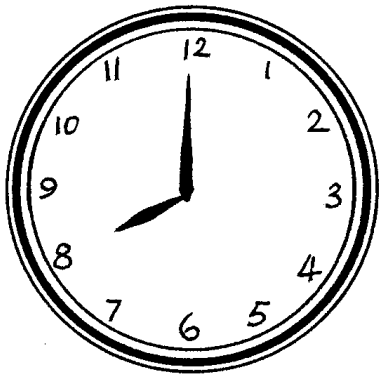
7. Betty has K500 and buys one pencil at K100 and one book at K300. How much change doe she get?

Answer: K100 change

8.



			 **Which line is longer?** **Answer: B**		
NR	**0**	**1**	**NR**	**0**	**1**

9.  **Which pumpkin can go in the box?** **Circle the pumpkin that will fit.** **One point if the bottom pumpkin is circled and the top and middle pumpkins are not circled.**			10. **What time in the morning is the clock showing?**  **Ans… 08:00 hours**		
NR	**0**	**1**	**NR**	**0**	**1**

Well done thank you for answering the questions

Literacy (Zambian Language)

- *Administer Tasks 1 and 2 as a group.*
- *All discussion and questions must be in the local Zambian language.*
- *Begin by greeting, introducing yourself and passing out the answer sheet for Tasks 1 and 2.*

Hello, my name is _____. I am very happy to see you today. Today we are going to be doing some tests to find out what you have learned in Grade 2. I will ask you some questions. Please write the answers on this paper. *[Pass out the answer sheet for Tasks 1 and 2.]*

Now, I am to going read out words for you to write.

Task 1: Word dictation and using words to form sentences

Question Stem	Instructions
Items 11 to 15: Write the following words on your paper:	*For Items 11 to 15: Dictate the following words:* **11. ball** **12. child** **13. clinic** **14. washing** **15. bicycle**
Item 16: Now here are some words. Write them on your paper. Use all the words to form a sentence.	*For Item 16: Let the learners see the following words – **firewood, mother, is carrying** – ask them to make a sentence.*

Rubric for Task 1 - Word dictation and using words to form sentences

Items 11 to 15: [5 dictated words worth 2 points each for a total of 10 points]	
Writes nothing at all, or writing not legible/readable	0
Writes the dictated word but with a spelling error	1
Writes the dictated word legibly, with no spelling errors	2

Item 16: Mother is carrying firewood.	
Writes nothing at all, or writing not legible/readable, or the sentence is not related to the dictation	0
Writes the sentence legibly using one or two dictated words, but not the full sentence	1
Writes the sentence legibly using all dictated words, but with only one spelling error	2
Writes the sentence legibly using all dictated words, with no errors	3

Task 2: Picture Story Writing

Question Stem	Instructions
Item 17: Write this sentence on your paper: 'Mother is cooking nshima'. Item 18: Write a sentence that describes what is taking place in picture 2.	*Show the learners two pictures that are arranged in sequence on a poster. Tell the learners that the pictures make a story, and show them how the sequence progresses.* *Discuss the first picture with the learners to help them understand the story. Ask the learners to tell you what mother is doing in the picture. You will be listening for the following, or similar sentence:* **Mother is cooking nshima.** *Ask the learners to tell you what mother and father are doing in the second picture. Discuss the picture with the children until it clear that children understand the picture.* *Ask the learners to write this sentence on the paper*: **Mother is cooking nshima.** *Give the learners a maximum of 5 minutes to write the sentence.* *After the learners have had five minutes to write the first sentence, ask the learners to write down a sentence about Picture 2. Give the learners a maximum of 5 minutes to write.*

Task 2: Picture Story Scoring Rubric

Item 17 (Dictation): **Mother is cooking nshima**	
Writes nothing at all, or writing not legible/readable, or the sentence is not related to the picture	0
Writes one or two words of the dictated sentence legibly, but not the full sentence	1
Writes the dictated sentence fully, correctly and legibly, but with one or more spelling errors	2
Writes the dictated sentence fully, correctly and legibly, with no spelling errors	3

Item 18 (Free writing): **Mother and father are eating nshima** *[or something similar]*	
Writes nothing at all, or writing not legible/readable, or the sentence is not related to the picture	0
Writes one or two words legibly, but not a full sentence.	1
Creates a full legible sentence about the picture, but with one or more spelling errors.	2
Creates a full legible sentence about the picture, with no spelling errors	3

Answer Sheet for Zambian Language Literacy Tasks 1 & 2

Grade 2, 2008

Student's Name: _____

Name of School: _____

District: _____

Province: _____

Date: _____

11. _____ 14. _____

12. _____ 15. _____

13. _____

16. _____

_____

17. _____

_____

18. _____

_____

- *Administer Tasks 3 to one learner at a time, away from other learners.*
- *All questions must be in the local Zambian language.*
- *Begin by greeting, introducing yourself and checking the information about the learner on the scoring grid.*

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.

Task 3: Reading

Item	**Instructions**
Reading Text: **Musa is cooking nshima.** **A chicken comes and eats the mealie-meal.** **He chases the chicken away.** **The chicken topples the mealie-meal.** **Musa is crying.**	*Present the reading text to the individual learner. The story should be written legibly on a separate sheet of paper, 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 each item (sentence) as the learner reads aloud.* **Note: Do not help the learner read the sentences.**

Rubric for Task 3

Item 19: Musa is cooking nshima. **Item 20: A chicken comes and eats the mealie-meal.** **Item 21: He chases the chicken away.** **The chicken topples the mealie-meal.** **Musa is crying.**	*Use the rubric below to rate the learner on sentences 19, 20 and 21 as they read. The maximum possible for each sentence is 4 points 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

Task 4: Reading Comprehension

Item 22: What was Musa cooking? **Item 23: What did the chicken do?** **Item 24: How do you imagine Musa felt at the end of the story? Why?**	*Get the text from the learner and ask the questions. Using the rubric and the scoring grid, score each item as the learner gives answers.*

Rubric for Task 4

Item 22: What was Musa cooking?	
Incoherent or mumbling response, or wrong answer	0
Correct answer: nshima	1

Item 23: What did the chicken do?	
Incoherent or mumbling response, or wrong answer	0
A partially correct answer. (For example: It ate. OR It toppled.)	1
A correct answer. (For example: It ate the mealie-meal. OR It toppled the mealie-meal.)	2

Item 24: How do you imagine Musa felt at the end of the story? Why?	
Incoherent or mumbling response, or wrong answer (e.g. Musa fell.)	0
A correct description of Musa's feelings. (For example: He felt bad. He was disappointed.)	1
A correct description of Musa's feelings and a correct explanation for his feelings. (For example: He felt bad. Because the chicken toppled the mealie-meal. OR He was disappointed. He did not have any food to eat.	2

Task 5: Life Skills

Item 25: If Musa is going to cook nshima again, what should he do to prevent the chicken from toppling the mealie meal? **Item 26: Why is it okay for Musa, a boy, to cook instead of doing a boy's task, such as looking after goats?** **Item 27: What chores do you do at home?** **For a girl: Can you also cut firewood?** **For a boy: Can you also wash the dishes?**	*The purpose of these questions is to test several life skills objectives:* • Gender Roles Objective: To encourage the learners to recognize that boys and girls can do the same things at home and at school (Mentor's guide, p81) • Family Roles Objective: Appreciate the importance of their role in their own family (Mentor's guide, p.46) *If the learner was unable to read the story, the story should be read aloud for the learner before asking the life skills questions. Using the rubric and the scoring grid, score each item as the learner gives answers.*

Rubric for Task 5

Item 25 [Objective: Problem-solving]: If Musa is going to cook chicken again, what should he do to prevent the chicken from toppling the mealie meal?	
Provides a realistic response with a good solution. (For example: Scare the chicken away. Cover the mealie-meal. Put the mealie-meal in a high place.)	2
Provides a realistic response, but not a good solution (Example: Kill the chicken. Poison the chicken.)	1
No response, incoherent or mumbling response, or an answer that does not provide a solution to the problem.	0

Item 26 [Objective: Gender roles]: Why is it good for Musa, a boy, to cook instead of doing a boy's task, such as looking after goats?	
Provides a response; accepts that roles should be interchangeable, and cites one reason that shows maturity in thinking, such as self-empowerment, or empowerment of the sexes; self sufficiency. (For example: It is good for him to cook because boys can do the same things as girls. OR He should know how to cook so he can take care of himself.)	3
Provides a response; accepts that roles can be interchangeable, and gives practical reasons. (For example: It is good for him to cook when his mother or sister are not at home.)	2
Provides a response; insists on keeping the roles separate. (For example: He should not cook. OR He should let his mother cook because she knows how to do it better than him.)	1
No response, incoherent or mumbling response, or an answer unrelated to the question. (For example: I don't know.)	0

Item 27 [Objective: Learners' roles in their own families]: What chores do you do at home? For girls: Can you also chop firewood? For boys: Can you also wash the dishes?	
Provides a response; accepts that roles should be interchangeable, and cites one reason that shows maturity in thinking, such as self-empowerment, or empowerment of the sexes; self sufficiency. (For example: Yes, I can do that because I need to help my brother/sister/mother/father. OR Yes, I can do that. I can do the same things that boys/girls do.)	3

Provides a response; accepts that roles can be interchangeable, and gives practical reasons. (For example: Yes, I can do that when my brother/sister are not at home.)	2
Provides a response; insists on keeping the roles separate. (For example: No, I cannot do that kind of work. OR No, my brother/sister does that.)	1
No response, incoherent or mumbling response, or an answer unrelated to the question. (For example: I don't know.)	0

Grade 2 English Language

- *Administer all questions to one learner at a time, away from other learners.*
- *All questions must be given in English. Do not translate.*
- *If a child responds in a local language, ask the child to give an answer in English.*

Now, I am going to ask you questions about some pictures. The pictures are like the ones you talk about here at the learning centre, OK? Now, here are the pictures:

Task 1: Speaking—Naming Occupations

Question Stem	Instructions
28. What is this person's job?	*Show five pictures one at a time to each individual learner. The pictures show people from the following occupations:* ***doctor/health worker, police officer, teacher, farmer/gardener, driver****. Hold up a picture and ask the learner, "What is this person's job? The learner earns one mark for each job identified correctly. After asking about each of the five pictures, give the learner a second chance if necessary.*

Scoring: One point for each correct word for a total of 5 possible points.

Task 2: Describing a Common Activity

Now, I am going to ask you a question about yourself. Please tell me everything that you can.

Question Stem	Instructions
29. At school you learn. What do you do after school? **30. Last Friday you went to school. What did you do last Saturday?**	*Ask the learner the question. Rate each response using the rubric below.*

Rubric for Task 2

Score	Description
NR	No response is given.
0	Says nothing at all, or speaking not comprehensible, or the response is not related to the question, or the response is not in English.
1	Says one or two comprehensible words that are related to the question, but not a full sentence. For example: Play. Eat. Church.
2	Says a comprehensible phrase or sentence related to the question, but with grammatical or structural errors. For example: 29. I played football. Do homework.

	30. I go to market. Play football.
3	Says a comprehensible sentence related to the question with no grammatical or structural errors. For example: 29. I play football. I wash dishes. I do my homework. I play with friends. 30. I went to the market. I played football. I went to church.

Task 3: Reading—Matching Words with Pictures

Show four pictures and six words written on flash cards to each individual learner. The six words are: ***cup, ball, window, flower, sister, clock****. Point to a picture and ask the learner what it is, then ask the learner to point to the word for that picture. The learner earns one mark for each word identified correctly. After asking about each of the four pictures, give the learner a second chance if necessary.*

Now, I am going to ask you questions about some pictures. Here are the pictures:

31a. What is this? Now point to the word "cup".

31b. What is this? Now point to the word "ball".

31c. What is this? Now point to the word "window".

31d. What is this? Now point to the word "flower".

Scoring: One point for each correct word for a total of four possible points.

Task 4: Reading—Matching Sentences with Pictures

[Show four pictures and four sentences written on a sheet of paper to each individual learner. Point to a picture and ask the learner a question about the picture. The purpose of the question is to help the learner understand the idea of the sentence: the answer to the question is NOT scored. Then ask the learner to point to the correct sentence. The learner earns one mark for each word identified correctly. After asking about each of the four pictures, give the learner a second chance if necessary.]

Now, I am going to ask you questions about some more pictures. Here are the pictures:

32a. Is this cat small? (Learner: No, it is big.) Now point to the sentence "The cat is big."

32b. What is the man carrying? (Learner: He is carrying a bag.)
Now point to the sentence "The man is carrying a bag."

32c. Where is the book? (Learner: On a table.)
Now point to the sentence "The book is on a table."

32d. What is the girl doing? (Learner: Kicking a ball.)
Now point to the sentence "The girl is kicking a ball."

Scoring: One point for pointing to a correct sentence, for a total of four possible points.

Task 5: Writing Words from Dictation

[Give the learner an answer sheet. Tell the learner that you will read a sentence and then he or she will need to write a word. Say each word two times after reading the sentence.]

Now, I am going to ask you write some words. First, I will read a sentence and then I will ask you to write one word from the sentence.

33. We write in an exercise **book**.

34. The tree is **tall**

35. The bus is on the **road**.

36. The dress is **yellow**.

37. Mother is **sweeping**.

Scoring rubric for Items 33 to 37: 5 dictated words worth 2 points each

Score	Description
NR	No response is written.
0	The word is spelt completely wrong. That is, not a single letter is written correctly.
1	At least one letter from the word is written correctly.
2	The word is spelt correctly.

Answer Sheet for English Task 5: Dictation

Grade 2, 2008

Student's Name: _____

33._____

34._____

35._____

36._____

37._____

Appendix B: Questionnaire for GRZ Teachers

Instructions: *This questionnaire collects information about Grade 2 classes in Zambian government schools that are using Taonga Market radio broadcasts.*

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

The respondent for this questionnaire is a Grade 2 teacher who is currently using Taonga Market educational broadcasts in a government school or a Grade 2 teacher in a control school. Record the answers by circling the answer or writing down a response.

Section A: General Information

A1. Date: _____ A2. Province: _____

A3. District:_____ A4. Village/Compound: _____

A5. Name of the school: _____

A6. Is the school using IRI or is it a control school? (Circle one.) 1. Using IRI 2. Control school

A7. Where is the school located? 1. In an urban area 2. In a rural area

A8. Name & Position of Test Administrator: _____

A9. Name of Grade 2 teacher interviewed: _____

A10. What is the teacher's highest educational attainment?

a. Grade 7 b. Grade 9 c. Grade 12 d. Other. Explain: _____

A11. What is the teacher's highest teaching qualification? (Example: Primary Teaching Certificate)

_____

A12. How many years of pre-service training has the teacher completed?

a. 1 year b. 2 years c. 3 years or more d. None

A13. How many years has the teacher been teaching? Number of years: _____

A14. How many teachers have taught the Grade 2 class for a week or more this year?

Number of teachers: _____

A15. How many days of training in Learning at Taonga Market has the teacher completed?

Number of days: _____

A16. How many years has the teacher used Learning at Taonga Market?

Number of years: _____

A17. How many classes and pupils at each grade level is the teacher teaching? *Fill in the table.*

Grade	1	2	3	4	5	6	7	Totals
Number of Classes								
Number of Pupils								

A18. How much time does the teacher *usually spend* with the Grade 2 class each day?

Amount of time: _____

Note: Questions A19 and A20 are only for teachers who use Learning at Taonga Market.

A19. How much time does the teacher ***usually spend with children*** on their learning tasks **before** the broadcast?

a. No time at all b. 5 – 10 minutes c. 11 – 30 minutes d. More than 30 minutes

A20. How much time does the teacher ***usually spend with children*** on their learning tasks **after** the broadcast?

a. No time at all b. 5 – 10 minutes c. 11 – 30 minutes d. More than 30 minutes

Section B: Language

B1. What language do the pupils use when playing?

1. Chitonga 2. Cinyanja 3. Icibemba 4. Lunda 5. Luvale 6. Kiikaonde 7. Silozi
8. Other: _____

B2. What Zambian language is used for literacy instruction in the teacher's class?

1. Chitonga 2. Cinyanja 3. Icibemba 4. Lunda 5. Luvale 6. Kiikaonde 7. Silozi
8. Other: _____

B3. Is the language of play the same as the language of instruction? 1. Yes 2. No

B4. How well can the teacher speak the Zambian language used for literacy instruction?

1. Very well 2. Satisfactorily 3. Slightly 4. Not at all

B5. How well can the teacher write the Zambian language used for literacy instruction?

1. Very well 2. Satisfactorily 3. Slightly 4. Not at all

B6. What Zambian language is being used in this test of Zambian language literacy?

1. Chitonga 2. Cinyanja 3. Icibemba 4. Lunda 5. Luvale 6. Kiikaonde 7. Silozi
8. Other: _____

B7. Is the Zambian language of instruction the same Zambian language used on this test?

1. Yes 2. No

Section C: Resources

Instructions: *Questions C1 to C7 are only for schools that use IRI. When interviewing teachers at control schools, skip questions C1 to C7 and begin with question C8.*

C1. Is the radio working? *1. Yes* *2. No*

C2. In general, how clear is the radio reception?

1. Very Clear: Loud with little or no noise from the radio

2. Acceptable: A little soft or noisy, but loud and clear enough to hear all words in the broadcast

3. Hard to hear: Occasionally too soft or noisy to hear some words

4. Impossible to hear: Frequently too soft or noisy to hear words

C3. How many days per week is the reception Acceptable or Very Clear?

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

C4. During 2006, were there particular times of the day or year when there was poor radio reception or

no radio reception at all? *1. Yes* *2. No*

If Yes, when was there poor radio reception or no reception at all?

_____

_____

C5. Does the teacher use antennae extensions to improve radio reception? *1. Yes* *2. No*

C6. If the teacher does **not** use antennae extensions, why not?

1. Radio reception is very clear *2. Doesn't know how to make an antennae extension*

3. Other reason:

_____

C7. Has the teacher received the timetable that includes Taonga Market lessons? *1. Yes* *2. No*
If Yes, how helpful is it to your teaching? 1. Very helpful 2. Helpful 3. Not helpful
Reasons for answer:

_____

_____

_____

_____

C8. Did the school have enough materials to use during the third term?

Chalk	*1. Yes*	*2. No*
Pencils	*1. Yes*	*2. No*
Exercise books	*1. Yes*	*2. No*
Mentor's guide	*1. Yes*	*2. No*
MOE register	*1. Yes*	*2. No*

C9. How many pupils share a Zambian language reader at a time?
1. Each child has a book 2. Two children share 3. Three children share
4. Four or more children share 5. No Zambian language readers to share

C10. How many pupils share a SITE activity book at a time?
1. Each child has a book 2. Two children share 3. Three children share
4. Four or more children share 5. No SITE activity books to share

C11. How many pupils share an English language story book at a time?
1. Each child has a book 2. Two children share 3. Three children share
4. Four or more children share 5. No English language story books to share

C12. How many pupils share a mathematics book at a time?
1. Each child has a book 2. Two children share 3. Three children share
4. Four or more children share 5. No mathematics books to share

C13. What do children put their exercise books on when writing in class?
1. Table 2. Desk 3. Bench 4. Floor 5. Other: _____

Section D: Use of Step Into English (SITE)

D1. Was the teacher trained in SITE? *1. Yes* *2. No*

If Yes, how was the teacher trained in SITE? *(Circle each type of training received.)*

1. Through school mentoring *2. Through a school workshop* *3. Through a district workshop*
4. Through a national workshop *5. No training*

D2. Does the teacher have each part of the SITE kit? Fill in the chart based on information from the teacher:

Does the teacher have the . . .	
a. Pathway 2: Oral English?	*1. Yes* *2. No*
b. SITE Teacher's Guide?	*1. Yes* *2. No*
c. 4 conversation posters?	*1. Yes* *2. No*
d. Learner's Activity Books for Grade 2?	*1. Yes* *2. No*
e. Story books for Grade 2?	*1. Yes* *2. No*

D3. Does the teacher use the SITE kit to teach literacy? *1. Yes* *2. No*

D4. If the teacher does **not** use the SITE kit, why not?

1. Doesn't have kit *2. No time for it* *3. Doesn't see the need for it*
4. Doesn't know how to use it
5. Other reason:

_____

Note: Question D5 is only for teachers who use SITE.

D5. If the teacher **does** use the SITE kit, how did the teacher organise the class when using the SITE kit during Term 3?

1. As a single group *2. As four social groups* *3. As four ability groups*
4. Other way of organising the class:

_____

Note: Question D6 is only for teachers who use Learning at Taonga Market <u>and</u> SITE.

D6. How well do Taonga Market radio broadcasts and SITE support each other?

1. Very well *2. Somewhat well* *3. Not well at all*

Reasons for answer:

_____

_____

_____

_____

_____

_____

Section E: Use of Mathematics Rainbow Kit (MARK)

E1. Was the teacher trained to use the Mathematics Rainbow Kit (MARK)? *1. Yes* *2. No*

If Yes, how was the teacher trained to use MARK?

(Circle each type of training received.)

1. Through school mentoring *2. Through a school workshop* *3. Through a district workshop*

4. Through a national workshop *5. No training*

E2. Does the teacher have the *MARK Teacher's Guide*? *1. Yes* *2. No*

E3. Does the teacher use the *MARK Teacher's Guide* to teach numeracy? *1. Yes* *2. No*

E4. If the teacher does **not** use the *MARK Teacher's Guide*, why not?

1. Doesn't have the book *2. No time for it* *3. Doesn't see the need for it*

4. Doesn't know how to use it *5. Other reason:*_____

_____

Note: Question E5 is only for teachers who use MARK.

E5. If the teacher **does** use the *MARK Teacher's Guide*, how does the teacher teach the class when using it?

1. As a single group *2. As four social groups* *3. As four ability groups*

4. As two separate streams

5. Other way of organising the class:

_____

_____

Note: Questions E6 is only for teachers who use Taonga Market and MARK.

E6. How well do Taonga Market radio broadcasts and MARK support each other?

1. Very well *2. Somewhat well* *3. Not well at all*

Reasons for answer:

_____

_____

_____

_____

_____

_____

Section F: Use of Multigrade Teaching

F1. Was the teacher trained to use Multigrade Teaching? *1. Yes* *2. No*

If Yes, how was the teacher trained to use Multigrade Teaching?
(Circle each type of training received.)
1. Through school mentoring *2. Through a school workshop* *3. Through a district workshop*
4. Through a national workshop *5. No training*

F2. Does the teacher have a teacher's guide for multigrade? *1. Yes* *2. No*

F3. Does the teacher involve the Grade 2 pupils in multigrade teaching? *1. Yes* *2. No*

If Yes, describe the members of the multigrade class that included the Grade 2 learners, giving
the grade level and the number of learners in the class.

Grade	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**Total**
Number of Pupils								

Note: Questions F4 and F5 are only for teachers who use Learning at Taonga Market and multigrade teaching.

F4. If the teacher **does** involve the Grade 2 pupils in multigrade teaching, how does the teacher combine the use of Learning at Taonga Market and multigrade teaching?

_____

_____

_____

_____

F5. How well do Learning at Taonga Market radio broadcasts and multigrade support each other?

1. Very well *2. Somewhat well* *3. Not well at all*

Reasons for answer:

_____

_____

_____

_____

_____

_____

Section G: Enrolment

G1. Instructions: Fill out this table based upon data from the register.

	Girls	Boys	Totals
How many Grade 2 learners were enrolled in term 3?			
How many Grade 2 learners were enrolled in Term 1?			
What is the difference in the average attendance? *(Use + to show an increase and – to show a decrease.)*			

G2. If Grade 2 attendance has increased or decreased, explain why:

_____

_____

_____

_____