

Zambia Quality Education Services Through Technology (QUESTT) Project

Interactive Radio Instruction Program - Evaluation Report
Grade 1

Prepared by:

Education Development Center, Inc.
USAID Award No.: 690-A-00-03-00096-00

December 2003

TABLE OF CONTENTS

EXECUTIVE SUMMARY	iv
1.0 BACKGROUND	1
Table 1: Number of IRI Learners in 2003, by grade and sex	1
Table 2: Grade 4 mean scores for IRI and GRZ schools - mathematics (2002).....	2
1.1 Purpose of the Evaluation.....	4
2.0 FINDINGS.....	5
2.1 Demand for IRI.....	5
2.1.1 Enrollment and new centers.....	5
Table 3: 2003 IRI Grade 1 Learners, by sex	5
Table 4: Number of Learning Centers in 2003, by Province and District.....	5
Figure 1: Demand for IRI in the Eastern province.....	8
2.1.2 New Audiences	9
2.2 Attendance	11
2.3 Profile of IRI Learners.....	12
2.3.1 Sex and age of learners	12
Table 5: Age of IRI learners in years, by province.....	14
2.3.2 Parent Status and Guardianship.....	13
Table 6: States of learners parents by province.....	14
2.3.3 Prior school attendance	14
2.3.4 What then, are the characteristics of the children who attend IRLCs?.....	15
2.4 Performance in basic literacy.....	16
Table 7: Test means for literacy, numeracy and the overall test (2003)	16
Table 7: Mastery by item and (skill area) domain (2003).....	16
Table 9: Mean comparisons for female and male learners.....	17
2.4.1 Mean scores for Grade 1, 2003 by district and center.....	16
Table 10: Test means for literacy, numeracy and the overall test (2003), by district.....	18
Figure 2: Centres, by locality and name, performing above and below 50 percent.....	19
2.4.2 Performance by age.....	20
Table 11: Performance by age category.....	21
2.4.2 Comparison with the 2001 cohort.....	20
Table 12: Test means for literacy, numeracy for 2001 and 2003.....	22

2.5	Impression on Effectiveness of IRI: Mentors, parents and other stakeholders.	21
2.5.1	Mentors.....	22
Table 13: Mentors' years of service and mean days of IRI training.....		23
2.5.2	Community/parent participation.....	22
3.0	CONCLUSION AND RECOMMENDATIONS.....	24
3.1	Previous recommendations.....	25
3.1.1	Demand for IRI.....	24
Figure 3: Recommendations from 2001 Grade 1 Evaluation.....		26
3.1.2	Attendance	26
3.1.3	IRI Learner Profile.....	26
3.1.4	Student Learning.....	27
3.1.5	Mentor Profile.....	26
3.1.6	Monitoring and Evaluation Framework.....	27
3.2	Siaciwena (2002) Recommendations	27
3.2.1	Lesson development	27
3.2.2	Broadcast production.....	27
Figure 4: Additional recommendations of August, 2002.....		29
3.2.3	IRI Management.....	28
3.3	Summary Recommendation.....	28
4.0	APPENDICES	29
	Appendix A: Methodology	30
Evaluation Sample: Grade 1 IRI Learners in 2003		30
	Appendix B: Data collection sheet for students' profile.....	35
	Appendix C: Content Mapping for Grade 1 - English	36
	Appendix D: Content Mapping for Grade 1 - Mathematics.....	37
	Appendix E: Test Blueprint for Grade 1 - English	38
	Appendix F: Test Blueprint for Grade 1 - Mathematics	39
	Appendix G: Test Plan: Basic Literacy and Numeracy	40
	Appendix H : Test of Mathematics and English Language Skills	41
	Appendix I: Test Administration Training Notes.....	44
	Appendix J: Guidelines for Test Administrators	50
	Appendix K: Mentor Questionnaire	51
	Appendix L: Focus Group Questions	54

EXECUTIVE SUMMARY

Prior to the current evaluation, EBS commissioned two IRI evaluations at the Grade 1, in 2000 and 2001. These evaluations sought to investigate whether there was demand for IRI and regular attendance at the IRI learning centers, and how much learning was actually taking place. Conducted in August-September 2003, the current evaluation is also for the Grade 1 level. Data from this evaluation were collected from a sample of 55 of 591 learning centers in five of nine provinces, with the sample size being 992 of 12 641 learners. Findings provide insights into demand for IRI as manifested in the enrollment and daily attendance, learner and mentor characteristics, and student mastery of basic numeracy and literacy skills using a curriculum based achievement test.

With EBS recording a total of 516 organized learning centers in all nine provinces in 2003, the demand for IRI is still high, both in terms of the number of learners who enroll in Grade 1, and those who have continued on to subsequent grades. Central, Luapula, Northern and Western provinces have established more than three times the number they started with in 2001. The total enrollment has grown from 7 782 learners when the programme went to scale in 2001 to 22 773 learners in 2003. Enrollment at Grade 1 has experienced a 66.6 percent growth, from 7 782 in 2001 to 12 641 in 2003.

Since 2001, EBS has produced and broadcast 855 programmes for Grades 1 to Grade 5. Most communities have expressed the desire to have programs for the entire primary phase, hence the Ministry of Education has decided to investigate the feasibility of adding programs for Grade 6 and Grade 7.

The current cohort of Grade 1 learners is estimated to be 50.2 percent female and 49.7 percent male. The overall mean age is 9.0 years. There are significant differences in the mean age when mean age is disaggregated by province (e.g. 8.2 years for Central province, compared to 10.3 years in Southern province). The population composition includes the school-going age group (7 - 13 years old), younger learners who should be in early childhood programs, and a small percentage from specialized groups such as in-mates, adult learners and street kids. The number of orphans recorded is 28.8 percent. The heterogeneity of the population is confirmation that there is a growing interest in IRI.

While learners continue to demonstrate that they are acquiring important skills of literacy and numeracy, performance in 2003 has dropped compared to 2001. This may be due to a larger and more heterogeneous sample in 2003. The mean score for numeracy is 63.0 percent (compared to 71.5% mean score in 2001), and 48.8 for literacy skills (compared to 56.6% mean score in 2001). The area in which learners showed weakness was in production of language, and writing of language in particular. As in the previous evaluations, learner performance increased as the age of the learner increased, while sex differences in performance were virtually nonexistent. There were significant differences in the performance of urban versus rural centers in that all urban

centres had a mean score of over 50 percent, while 10 of 24 rural centres had a mean score below 50 percent. However, 3 of the top 6 centres (that had a mean score of 70 or above) are situated in urban Lusaka, while the other three are in rural localities.

While students continue to come regularly to the centers for broadcasts, mentors indicated that centers do miss broadcasts, sometimes due to reasons beyond their control. It is estimated that 67.3 percent of the centers missed only one program, while 19.1 percent of the centers missed 10 or more broadcasts. This figure is unacceptably high. Approximately 14 percent of the mentors also reported that they had lost 10 or more learners who had dropped out for a variety of reasons.

The challenges faced by the IRI program are similar to those identified in the 2001 evaluation. These include difficulties in the learning environment such as lack of shelter and malfunctioning radios in some centres, as well as inadequate mentor training and/or support from the communities. In contrast, centres with more community support were noted as positively impacting test performance scores. The majority of mentors (54.6 percent) deemed their centers to be a success, while a small number (3.6 percent) admitted that their centers were not successful. A much higher majority (more than 80 percent) assessed that IRI centres to be doing as well as government schools in providing education to children, while the focus group meetings with community members revealed that they want to be assured of the continuity of IRI, both in terms of being there for as long as it is needed, and also extending the programs to Grades 6 and 7.

In addition to following-up on recommendations made in a number of IRI evaluation reports, this evaluation recommends that EBS should take advantage of the restructured departments and positions within the Ministry of Education (MoE) to streamline IRI activities such as outreach, monitoring and evaluation. This and other activities will ultimately help define the role of IRI in the overall provision of basic education in Zambia.

1.0 BACKGROUND

The Interactive Radio Instruction (IRI) program in Zambia is founded on a mandate to provide an alternative basic education delivery system for the existing national curriculum. The IRI initiative was launched in July 2000 when Grade 1 programs went on air for pilot testing in 21 centres in Lusaka and Southern provinces. Since then, the program has been implemented in all provinces. 855 lessons have been developed, produced and broadcast for Grade 1 through to Grade 5. Thirty-two teachers have been trained to write lessons and produce radio programs¹, while more than 800 mentors have been recruited and trained to manage the learning and the centers. A total of 169 IRI learning centers were established in 2001 in all the nine provinces. That number had grown to 516 centers in 2003, operating in 62 of the 73 districts in Zambia.

Since its inception, the IRI program has had three cohorts of Grades 1 and 2 learners, two cohorts of Grades 3 and 4 learners, and one cohort of Grade 5 learners. Table 1 below indicates the number of IRI learners, by grade and sex in 2003. A total of **22 763** learners were enrolled in IRI programs as shown in Table 1. Grade 1 learners continued onto Grade 2 during the second half of the year. Similarly, Grade 3 learners continued onto Grade 4, while Grade 5 learners attended at this grade level throughout the year.

Table 1: Number of IRI Learners in 2003, by grade and sex

<i>Province</i>	Grade 1/2		Grade 3/4		Grade 5		<i>Total</i>
	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	
Central	1068	1139	845	873	354	385	4664
Copperbelt	431	397	289	312	53	88	1570
Eastern	861	974	315	361	123	183	2817
Luapula	722	564	174	159	23	44	1686
Lusaka	986	818	697	539	505	447	3992
Northern	1164	1200	751	986	140	178	4419
N/Western	391	410	114	117	23	49	1104
Southern	495	513	140	180	106	138	1572
Western	250	288	144	180	38	39	939
TOTAL	6368	6303	3469	3707	1365	1551	22763

Since it admitted its first non-pilot learners in 2001, IRI has expanded to a total of 6 curriculum subjects. English and Mathematics are offered for Grades 1 and 2. Two additional subjects, Science and Social Studies, are offered at Grade 3 and 4, while Religion and Home Economics are included in the Grade 5 curriculum. A non-examinable Life-skills and HIV/AIDS education segment is incorporated into each half hour lesson. The IRI learning program for the foundation phase spans 2 years, with Grades 1 and 3 being aired for 100 week days during the first half of the year, while

¹ Twelve of the scriptwriters have since gone back to take teaching responsibilities in GRZ schools.

Grade 2 and 4 programs are aired for 100 week days during the second half. The Grade 5 learning program is aired for 160 days, spanning the whole year. Programs for each grade are aired twice a day during working days.

Several evaluation activities have been undertaken, one during the pilot and others during the IRI implementation period. These include formative evaluation of programs, where writers take turns to test their programs at a learning center, collecting baseline data on how much knowledge the children had at the onset of the IRI program, an appraisal of their attendance and how well they had learnt after 50 programs.

Two evaluations (mid-pilot and summative) were conducted at Grade 1 in 2000 on the pilot sample, (Chondoka, 2000; EDC, 2000). A Grade 1 summative evaluation was again conducted in 2001 (EDC, 2001). Other evaluations of the IRI program were conducted in 2002 at the Grade 2 and Grade 4 levels by the Examination Council of Zambia (ECZ). Also in 2002, an appraisal of the IRI system was conducted by an external evaluator from the University of Zambia (Siaciwena, 2002).

The ECZ evaluation compared IRI learners with a corresponding sample of learners in government schools. The Grade 4 evaluation was particularly important because it became part of the country-wide competency testing that is conducted by government at the end of the foundation phase. In both Grades 2 and 4, IRI learners were found to be performing just as well as GRZ learners, especially in numeracy. For instance, the results of the Grade 4 evaluation revealed small non-significant differences in mean scores of IRI learners as compared to those in GRZ schools in Mathematics. Table 2 presents the Mathematics results as reported by ECZ.

Table 2. Grade 4 mean scores for IRI and GRZ schools - Mathematics (2002)

<i>DOMAIN</i>	<i>IRI</i>	<i>GRZ</i>
Notation	83.0	73.0
Numeracy	50.0	43.0
Addition and subtraction	67.4	67.2
Multiplication	52.0	44.4
Division	57.0	46.0
Number patterns	55.0	46.0
Decimal measures	37.0	34.0
Shapes and measurements	39.0	18.0
Fractions	59.0	38.0
TOTAL MEAN SCORE	57.0	46.6

Summative evaluation at the Grade 1 level in 2000 was conducted by EBS/EDC staff, under the supervision of an external consultant. The evaluation confirmed a high demand for IRI and growing interest in establishing more centres. Also, learners were attending daily broadcasts as expected. The evaluation also revealed that IRI learners were meeting learning targets as stipulated in the MOE primary school curriculum. No significant differences were reported between boys and girls, neither were there differences between learners from centers in urban and rural localities.

The August 2001 Grade 1 evaluation revealed, also, that children were learning and that the IRI learning program was providing a viable alternative to out-of-school learners. However, the evaluation also revealed that the programme was facing a number of challenges. It was recommended that the MOE should articulate a regulatory IRI strategy that provides the minimum requirements that should be met in order to ensure that the program reaches those who need it most; that mentors be encouraged to keep attendance information and a journal documenting critical incidents; that EBS consider a standard setting exercise in order to provide consistent descriptions of learning achievement and for year to year comparisons, and that a database of centers, learners and mentor profiles be established in order to improve efficiency and allow greater manipulation of data, as well as easier linkage to the MOE's Planning Unit (Letshabo, 2001).

The August 2001 evaluation made additional recommendations, meant to make IRI more sustainable. The most critical was to find measures to prevent mentor attrition in view of the critical service that mentors provide. It was recommended that MOE/EBS should delineate the profile of an ideal mentor for the IRI program, her/his training needs, as well as explore options for mentor incentives such as preferential admission to teacher training. Most of the recommendations were not yet implemented at the end of 2003, mainly because of resource constraints, both human and material.

In August 2002, USAID commissioned an evaluation of the systemic aspects of the IRI program, where evaluators set out to investigate whether the major components of the system were functioning as expected, the strengths and limitations of the IRI delivery system and how delivery and other aspects could be improved. Findings of the evaluation were presented in a report entitled "Rapid Appraisal of the Ministry of Education's Interactive Radio Instruction Basic Education Delivery System" (Siaciwena, 2002). The findings of the report were presented under two general headings, that is, the instructional system and the support system. The findings on the instructional system confirmed that there was a high demand for IRI in many communities, and that the demand was growing. It also confirmed the centrality of the mentor in the whole IRI process, and the need to devise extraordinary measures that would ensure that mentors remain motivated to perform their roles in IRI.

However, this evaluation also addressed, for the first time, issues pertaining to the production of lessons and the quality of the broadcasts, working relations between EBS and other MOE departments, strategic partnerships with others outside the MOE system, and MOE driven professional development for mentors and producers. It presented a list of twenty-seven recommendations, some of which are already being implemented. Figure 2 in Section 3 provides a summary of actions so far undertaken in response to the recommendations made in August 2001 (Kariuki & Letshabo, 2001), and in August 2002, (Siaciwena, et. al., 2002).

EBS has taken other definite steps to strengthen the IRI programme. In particular, IRI Provincial Outreach Coordinators (POC) were recruited in June 2003 to support the MoE offices at the provincial and district levels. The terms of reference for the POCs include the following:

- 1) Collection of accurate data on enrolment, attendance and retention;
- 2) Act as a link between the IRI centres at district and provincial MOE levels, and EBS for purposes of information gathering and sharing;
- 3) Support the MOE staff in provincial, district and zonal levels to facilitate the provision of conducive learning environments;
- 4) Assist provincial IRI Focal Point Persons in co-ordinating IRI activities (e.g. mentor training, monitoring centres, supervising and coaching mentors)
- 5) Supporting the Outreach and Monitoring advisors in soliciting and exploring support from NGOs, churches, individuals and business houses and
- 6) Working with MOE in expanding and strengthening the support to IRI centres and community schools through professional and logistical support.

These and other measures were taken to systematize IRI monitoring processes within the MoE, and to create engagement and ownership of the programme at the community level.

1.1. Purpose of the Evaluation

The purpose of this evaluation was to assess whether Grade 1 learners that receive IRI programs continue to meet learning targets in numeracy and literacy as stipulated in the curriculum objectives, and whether the programs continue to benefit the population for which they were originally intended, that is, out-of-school children experiencing socio-economic hardships. Just as the previous evaluations, this evaluation assessed if there still is a demand for IRI programs at Grade 1, and whether the learners attend daily broadcasts as expected. Other evaluation questions addressed the effectiveness of IRI as a means of imparting basic literacy and numeracy skills.

Data on enrollment, background characteristics of the learners, and attendance was collected at the selected 55 of 516 centers. The evaluation strategy stipulated the use of population parameters to describe the profile of learners in the centers, in particular their sex, age, who their guardians are, and whether they have any living parents (orphan status), and sample statistics for the achievement scores. The sample size was 992, 11.5 percent of the population. The sample was drawn from 5 of the 9 provinces.

A curriculum-based achievement test was used to assess performance in literacy and numeracy skills. Since programs are delivered through the medium of radio, some adjustments were made to the existing curriculum to make it suitable for radio.² These differences were accommodated when developing the achievement test. A detailed discussion of the methodology is presented in Appendix A.

² Adjustments include restating some objectives and sequencing of the curriculum.

2.0 FINDINGS

2.1 Demand for IRI

2.1.1 Enrollment and new centers

The demand for IRI has continued to grow. IRI was rolled out to all the nine provinces, initially with the instruction to establish only a few centres in each province. Out of a total of **22 763** learners who were enrolled in IRI programs in 2003, the population of Grade 1 learners was 12 641 in 2003, compared to 7782 in 2001 (61.6 percent growth) as shown in Table 3.

Table 3: 2003 Grade 1 IRI Learners, by sex

Province	2001		2003	
	Female	Male	Female	Male
Central	465	553	1068	1139
Copperbelt	445	485	431	397
Eastern	426	400	861	974
Luapula	117	134	722	564
Lusaka	1257	1252	986	818
Northern	306	365	1164	1200
N/Western	186	178	391	410
Southern	486	503	495	513
Western	100	124	250	288
TOTAL	3788	3994	6368	6303

The number of learning centers has increased from 251 (169 verified) in 2001, to 516 in 2003, with the Central, Luapula, Northern and Western provinces having established more than three times the number that they had in 2001 as shown in Table 5. At least eighty-eight of the Interactive Radio Learning Centres (IRLCs) are community schools³.

Table 4: Number of Learning Centers in 2003, by Province and District

Province	No. of Districts with IRI centres		No. of centers in operation	
	2001	2003	2001	2003
Central	05	06	32	96
Copperbelt	06	10	30	63
Eastern	07	08	22	61
Luapula	01	07	05	54
Lusaka	04	04	61	46
Northern	04	12	22	82
Northwestern	03	06	37	53
Southern	04	04	33	26
Western	01	05	09	35
TOTAL	35	62	251	516

³ See Section 3.1.2 on new audiences.

Communities have continued to open new centers and operate under very difficult circumstances. For example, in Lusitu, a drought prone area in the Southern province, a community school started using IRI since 2003. Due to the inability to grow crops, people eat wild grass, wild vegetables and wild roots to survive. Still, the community has found ways to support the mentor, e.g. by providing him with some of the few drought resistant crops that are grown in the area, such as finger millet and sorghum.

In Mongu district in the Western province, typically thought of as the 'sandiast district in Zambia', people mainly grow cassava and rice on a small scale. Though they get fish from the Zambezi river, this is seasonal. However, the community, through the Catholic church, supports the Mutwiwamba IRI Centre mentor by providing a 25kg bag of maize and cooking oil every other week. Community support is evident and particularly critical where mentors have died (e.g. in Chilanga at Linda center and Chongwe at Ndashika center), communities have managed to quickly mobilize and re-organize their centre operations to keep them going.

In Southern province, Chikuni Community Radio, with the support of the Catholic church, continues to be not only a strong IRI pioneer in the province, but also the strongest among EBS partners. Chikuni has added 4 new centres, from 19 centers in 2001 to 23 centers in 2003, with their enrolment growing from 640 in 2001 to 1 200 learners in 2003. The IRI programme in Chikuni covers Grades 1 through 5.

Apart from the growth in enrolment and opening new centers, other evidence of demand and growth of IRI, indeed its role as the alternative avenue through which access to affordable basic education is provided in Zambia, is its expansion to 6 curriculum subjects and to five grade levels. Also, the resources that the MoE has committed to it as measured by the hours and cost of airtime/broadcasting time, printing of mentor's guides for each grade, confirmation of teachers as producers at EBS, accommodating IRI outreach coordinators in provincial offices, budgeting for monitoring of IRI activities at district level, etc.

The IRI programme currently takes up a good part of the day on Radio 2, of one of the most popular channels of Zambia National Broadcasting Corporation (ZNBC). The IRI broadcasts start at 0930hrs to 1630hrs during weekdays, breaking only for news segments. It is highly likely that IRI will continue to grow at least in the near future as can be seen below in Figure 1 on the next page, in an exchange between MOE officials, a chief and a local councilor in the Easter Province.

Figure 1: Demand for IRI in the Eastern Province

However, IRI has not always fared well. A total of 22 centres, 15 in Lusaka and 7 in the Southern province (Kalomo, Livingstone, Monze and Mazabuka districts) have had to close down for numerous reasons, including:

- Mentor attrition, where mentors leave in pursuit of other opportunities such as employment (e.g. Mapepe, Lusaka) and personal development (the mentor in Misisi (Lusaka) opted to attend teacher training college);
- Free education policy (e.g. Nchute, Chongwe - Lusaka);
- Misunderstanding over IRI vs. Community school learning. For example, in George (Lusaka), the centre was turned into a community school with a view to benefit from MOE school community grant. It seems that people did not understand that they could 'graduate' into becoming community schools as well as continue using the radio lessons;
- Lack of community support, commitment and understanding (for example, in Kalomo, Southern province). In several places, it was reported that children attended broadcasts out of sheer enjoyment rather than parental encouragement. In fact, while parents did not oppose the children's learning, they seemed totally disinterested in supporting the mentors or the centres in any way. This resulted in mentors being discouraged, especially when they compared their situation to the kind of support that Chikuni mentors got. In Livingstone, communities also failed to replace one mentor who showed up drunk every day and the centre eventually closed;
- Lack of support from some MOE provincial offices (hence, information regarding mentor training, need for radios, sensitization, etc. does not reach EBS);

Enrollment and demand for IRI should be understood against a backdrop of a number of factors. First, Zambia has a lot of children of school going age who are not in school (an estimated 700,000 in 2000⁴) Secondly, the government started implementing its Free Primary Education (FPE) policy in 2002. An increase from 7782 Grade 1 IRI learners in 2001 to 12 641 in 2003 still indicates that IRI is filling a definite need, and is also emerging as an alternative way to providing access to schooling. However, there might be other lessons to learn on progression from one grade to the next.

The 2003 Grade 5 learners, estimated to be 2916 in number, is the same cohort that started in Grade 1 in 2001 with an enrollment of 7782. On the surface, it may seem that IRI has high attrition and/or wastage rates (about 62 percent). Without a proper tracing mechanism, it is not possible to conclude that the children who have not continued with the IRI programme are "wastage".

First, government started implementing FPE in 2002 when the cohort was entering Grade 3, which means that a significant number of learners may have opted for "free" education in the school system. Second, a sizeable number of IRLCs are located in urban

⁴ Basic Education Sub-Sector Investment Programme (BESSIP): 2000 Programme Performance Indicators," Republic of Zambia, Ministry of Education, November 30, 2001.

and/or peri-urban areas where there are schools, which means that learners may have opted to continue their education in the school system after taking advantage of the IRI accelerated approach. Thirdly, the 2001 Grade 1 cohort had a significant population of under-aged learners (6.4 percent). These may have joined the school system in 2001 just by virtue of the fact that schools were ready to accept them, and that their education was going to be free and/or subsidized.

Indeed, in Samfya and Mansa districts in Luapula province, as well as in Chadiza and other parts of Eastern province, monitoring visits have observed that some communities do not take IRI seriously, or perhaps do not understand the intention of IRI and are using it more as a nursery school. One would expect that such children would go into the school system when they reach school-going age. Fourth, some of the over-aged learners, estimated at 20.8 percent of the 2001 cohort, may have decided that they had attained functional literacy, which might have been their goal for attending IRI in the first place.

On the other hand, it is quite possible that the demand for IRI at the higher level is not as high as at the lower levels, in which case it may not be cost effective to deploy resources beyond the lower primary cycle (ending at Grade 4). Whatever the case, it will be necessary for EBS to monitor the 2002 and 2003 cohorts closely as they approach Grade 5 and, if possible, conduct a tracer study to provide the MoE with the evidence that they need to make data-driven decisions on how best to use IRI.

2.1.2 New Audiences

It has been demonstrated before that in addition to the original population of out-of-school and vulnerable children, IRI has attracted adult and under-aged learners (EBS, 2001). Exposing under-aged children that are not yet of school going age to organized learning has been passed as a positive development for IRI. However, this population, estimated at 500 of the 7782 learners in 2001 (6.4 percent) compared to 1298 of 12 641 (10.3 percent) in 2003, is continuing to grow. Reports from centers continue to indicate that having learners who belong to early childhood programs in IRI programs does interfere with the smooth running of the learning process. As in 2001, it has been found to be necessary either to restrict enrollment to a certain age attendance, or to articulate a strategy for handling younger learners.

Adult learners have persisted to the Grade 5 level in Chikuni Parish in Monze district. Other new audiences that have started to use IRI are community schools, while plans are underway to make IRI available to in-school learners, at the request of the Permanent Secretary. The intention is to air half hour segments in the morning as a means of supplementing classroom learning activities, while maintaining the focus on out-of-school audiences.

Evidence also shows that IRI is meeting an important social and educational need, with its attraction of new and non-conventional audiences. EBS has received requests to

open new IRI centers to complement the education services in the prisons systems, with preparations to open a prison center in the Copperbelt already being underway. Even though this plan has not yet materialized, there have been talks to open a center for street kids in Kitwe.

As part of its outreach effort, IRI has gone into partnership with a number of communities and organizations in 2003. One of the important is the Zambia Community Schools Secretariat (ZCSS), an umbrella organization for all community schools, with a total of 1,340 schools affiliated to it in 2002. In 2003, new partnerships were formed with the community school movement through a variety of players:

- With support from UNICEF Zambia, 200 community school teachers were trained by MOE officials in IRI methodology. UNICEF subsequently gave 200 radios to ZCSS to be distributed to the schools where teachers had been trained, while EBS provided 200 mentors guides. As a follow-up action, EBS organized IRI sensitization training for ZCSS management in March 2003.
- ZOCS (Zambia Open Community Schools) - an affiliate of ZCSS, operates 17 schools mainly in Lusaka (1 in Kabwe, Central province) with support from a variety of donors. ZOCS has always been interested in using IRI and distributed radios to all of their schools as early as 2001. However, monitoring has been inconsistent over the years. In 2003, there was renewed effort to encourage ZOCS teachers to introduce IRI in their schools with a request for EBS to train teachers and supervisors. This came about as a result of a few teachers who had been using IRI sharing positive reports about their experiences. Other teachers felt it was very important for supervisors to understand IRI so that they can support them more. Hence, in February 2003, EBS held a two day training, one for teachers and another for supervisors. All ZOCS schools have been sensitized and should be using IRI.
- In 2003, the Reformed Open Community Schools (ROCS) expressed an interest in having IRI in some of their affiliates, and requested training for teachers. A total of 65 schools benefited from this training, 11 in the Copperbelt (5 in Kitwe and 6 in Ndola), 11 in the Eastern province (Chipata district), 43 in Lusaka (21 in Chongwe and 22 in Lusaka urban).

It is anticipated that many parents, some of which have expressed the feeling that the school system is shortchanging them by not allowing their children to receive IRI programmes, will welcome this move. On the whole, while the situation at Grade 5 level needs to be studied closely, there is overwhelming evidence that the demand for IRI continues to grow, especially at lower primary (Grade 1 through Grade 4). A number of those who extol the virtues of IRI have boasted that it has so far been a reliable learning avenue for their children as can be seen in the quotation below.

“This programme Madam PS, has got an advantage, because we mentors,
we don’t go for strike”
IRI Mentor, Webster Haamonga, Spokesperson for 60 Chikuni Mentors, 28 October, 2003

However, it may be necessary to reexamine whether the original audience of out-of-school and vulnerable children are not being shortchanged by other demands on the program. For instance, data has shown that orphaned children constitute only 28.8 percent of learners who participate in IRI compared to 32.2 in the GRZ school population, which makes orphans somewhat underrepresented in this program. Is that acceptable, given that there is evidence that many more children are orphaned? If not, would it be desirable to extend EBS outreach efforts to seek out orphaned and other vulnerable children, and to ascertain that they are extended first priority towards this learning opportunity? These and other such questions need further investigation and resolution.

The other concern that needs to be addressed is that of spontaneous expansion of the program, as has been demonstrated by opening of more centers than anticipated (516 in 2003, as opposed to the projection of 350 by 2005 in the EBS Five-Year Strategic Plan), and the attraction of new audiences such as street kids and prisoners. While we acknowledge the fact that IRI has become an important strategy/alternative in extending access to basic education in Zambia, there is a potential to overwhelm the IRI support system to a point where it might cease to be effective (e.g. in provision of training and materials). A measure that can be used to safeguard the effectiveness of IRI could be to classify IRI centers into the categories of support that they will receive from EBS.

2.2 Attendance

Apart from managing the learning environment, one of the important tasks that mentors are expected to carry out is to take daily attendance. This was more manageable during the piloting phase when one of the pilot activities was to take attendance and submit registers to EBS on a monthly basis. Since then capturing attendance data has continued to be a problem. For most mentors, especially at centers who enroll 100 learners or more, the cost for taking daily attendance is loss of time for meaningful learning activities. As a result, most mentors neglected taking attendance with the result that attendance data was rudimentary.

It is estimated, from available data, that on average learners attend 75 of the 100 days and receive IRI daily programmes at IRLCs. However, while children may show up for the daily programmes, learning is sometimes interrupted due to factors that are beyond the control of the mentor and/or the children, such as mentor absence, or radios that are not working. For instance, additional data from mentor questionnaires reveal that only 32.7 percent of the mentors reported that their centres had received all 100 days of broadcasting. The remaining 67.3 percent reported that they missed at least one day of broadcasting due to a malfunctioning radio in the period between January and July 2003, with 19.1 percent of those missing 10 days or more. In another example Mbulwe

centre in Serenje district lost more than 10 days of IRI programs when their center shelter collapsed while centers in Mongu lost a full week of broadcasting due to poor reception. Mentors also reported high learner attrition rates. While only 15.7 percent of mentors had not had any learner drop out of school in the period between January and July 2003, 14.8 percent reported a dropout rate of 10 or more learners.

From the data that is available, there seems to be a need to monitor attendance more closely than has been done in the past, and to ensure that those who attend the IRLCs do receive the lessons. A recommendation that was made in the past was to develop a mentor-friendly strategy for tracking daily attendance, and avail official MOE registers that can be reclaimed at the end of the grade. An additional strategy would be to train mentors to only make a marking against the children that are absent in any given day, and to complete marking of the register at the end of each week.

The mentor could also involve the children in boosting attendance rates by making them part of the “register marking” exercise by having them report who is absent, and tasking them to show up on the next day with a friend that was absent. This could actually interest them in attending the daily broadcasts. Needless to say, it is important for learners to attend daily broadcasts as their performance is usually judged against all the lessons.

2.3 Profile of IRI Learners

Learner profiles are necessary to ensure the best possible intervention for IRI recipients. Data collected on learner characteristics included sex, age, and whether they are orphans. Data was also collected on whether or not learners had formal schooling prior to enrolling at the center. Once more, sample data was used, with the unit of analysis being the individual learner. Generalizations on the profile of the learners are being made from the sample data to the population.

2.3.1 Sex and age of learners

The total number of learners enrolled in IRLCs indicates that there are 49.7 and 50.2 percent male and female learners, respectively. The mean age of the learners was 9.0 years, whereas the modal age was 8 years old (21.0 percent of the learners). The mean age for girls is 8.9 years compared to 9.2 years for the boys.

There were differences in the mean age by province as shown in Table 5. The mean age of learners from Southern province is approximately 2 years more than the mean age in Central and Luapula provinces. The current sample of learners did not include any adult IRLCs, hence the age variation was relatively narrow, compared to the 2001 evaluation. However, the number that is beyond the official age for lower primary has remained at 21.1 percent of the learners.

Table 5: Age of IRI learners in years, by province

	Northern	Central	Luapula	Lusaka	Southern	<i>Overall 2003</i>	<i>Overall 2001</i>
Mean age	9.2	8.2	8.6	9.0	10.3	9.0	9.7
Modal age	10.0	8.0	8.0	10.0	8.0	8.0	7.0
Minimum	5.0	5.0	6.0	6.0	6.0	5.0	5.0
Maximum	16.0	14.0	13.0	13.0	16.0	16.0	51.0

Having younger learners seems to suggest that IRI centres are being used in the place of regular schools. It will be interesting to note, also, that learners from Central and Luapula provinces performed significantly lower than learners from the other three provinces.

2.3.2 Parent Status and Guardianship

Of the number reporting (579 of the 828 learners) 71.1 percent of the children had parents, while 28.8 percent were orphans as indicated in Table 8. Double orphans constituted 7.5 percent, while 21.4 percent learners had only one living parent. Compared to the 2001 evaluation where 33.2 percent of the children were reported to be orphans, this finding goes contrary to the trend as recorded by government and NGOs. This could be a confirmation of the suspicion voiced in the previous evaluation, that the number of orphans is being under-reported.

Table 6: Status of learners' parents by province

Living Parents	Northern	Central	Luapula	Lusaka	Southern	All Learners
Both alive	74.5	80.6	44.7	85.7	59.2	71.1
Only mother alive	18.6	7.4	31.6	6.6	22.5	17.6
Only father alive	2.2	6.0	9.2	1.1	5.6	3.8
No living parent	4.7	6.0	14.5	6.6	12.7	7.5
Orphans	25.5	19.4	55.3	14.3	40.8	28.8

One reason that was proffered for under-reporting of orphans is the inconsistency between the official definition and cultural definition of orphans, where children are not considered orphans if they are adopted into the family of a close relative, albeit unofficially. Mentors have confirmed, from their personal knowledge of the children in their communities, that significantly more children in their centers were orphans, even though the adult guardians did not want to disclose that information about their protégées.

Table 6 indicates, also, that there are significantly more orphans in Southern and Luapula provinces and much less in Lusaka province. By virtue of the fact that urban centers in Zambia have a higher prevalence of HIV/AIDS and HIV related deaths, it was expected that there would be comparatively more orphans in the urban areas, particularly in the case of HIV/AIDS orphans. However, it is possible that orphaned children are increasingly being sent to the countryside to live with their grandparents, especially in cases where both parents are deceased. Another explanation for the low

prevalence of orphaned children in urban centers such as Lusaka is that most centers are situated in high poverty areas, such as Bauleni, Chainda, Kamanga, and Kanyama compounds. While children in those areas may be having both parents, their vulnerability stems from the overwhelmingly high poverty levels that their families live in. They are therefore, a legitimate population for IRI programs. More attention should be paid to the issue of the orphan status of children and other types of vulnerability, especially with the ever looming need for regulating attendance.

2.3.3 Prior school attendance

Only 5.7 percent of the learners had some schooling experience prior to enrolling in the learning centers, compared to more than 16 percent in the previous cohorts. A possible explanation for this may be that the IRI program is increasingly meeting the needs of children for which it was originally started, those who were totally left out of the school system.

2.3.4 What then, are the characteristics of the children who attend IRLCs?

Whereas IRI was intended for disadvantaged children, it is not clear whether IRI learners are significantly different from the typical school learners. The mean age and the overall age distribution indicates that IRI learners are older than learners in the primary school system. This does suggest that IRI is catering for learners who were “left out”, referred to as the ‘over-age’ in the official school system. But apart from the age, learners in IRLCs and government schools are comparable in all the other characteristics under investigation. For instance, the orphan status of the IRI learners is comparable to that of the school population, which seems to suggest that the learners are not necessarily “disadvantaged”.

There is a need, therefore, to revisit the original intent of IRI, that of reaching out to “out-of-school” children and to assess the extent to which it is being met within current arrangements. Empirical evidence seems to suggest that IRI is an alternative avenue that is also addressing the issue of access to primary education for a variety of audiences. Is this an acceptable development? If so, does the MoE want to drive it? These and other similar issues need, also, to be addressed by policy positions.

2.4 Performance in basic Literacy and Numeracy

Grade 1 learners attained a mean score of 24.2 out of 44 possible points on the whole test (a composite score of the numeracy and language score), a mean of 55.0 percent. The lowest score was 0, and the highest, 44. The mean score for the numeracy component was 12.6 out of 20 (63.0 percent), while the mean for the language component was 11.7 out of 24 possible points (48.8 percent).

Table 7: Test Means for Literacy, Numeracy and the Overall Test (2003)

Content	N	Minimum	Maximum	Mean	Std. Dev.
Numeracy	826	.00	20.00	12.6	4.7
Literacy	821	.00	24.00	11.7	5.7
Total Test	828	.00	44.00	24.2	9.1

As with previous evaluations, learners performed better on the numeracy component than on literacy. This is to be expected, particularly that they get the opportunity to practice numeracy skills in their daily lives. Table 8 below presents information on the percentage of learners who mastered each item, with items grouped under the different domain. It also provides, for comparison, the subtest mean for each domain (skill area).

Table 8: Mastery by item and (skill area) domain (2003)

Skill Area	Items	Non-Masters	Partial Masters	Masters	Domain Mean
Production of language	Item 16	20.5	7.6	71.9	4.7 of 12 (39.2 percent)
	Item 17	28.6	12.5	58.8	
	Item 18	43.2	25.5	31.3	
	Item 20	31.4	39.8	28.8	
	Item 21	67.1	22.4	10.5	
	Item 22	68.5	12.9	18.7	
Comprehension of language	Item 13	38.8	11.0	50.2	4.3 of 8 (53.8 percent)
	Item 14	14.9	22.6	62.5	
	Item 15	24.4	15.1	60.5	
	Item 19	36.2	25.5	38.2	
Recall of names	Item 11	10.1	23.7	66.2	2.9 of 4 (72.5 percent)
	Item 12	16.5	23.3	60.1	
Counting and writing numbers	Item 01	1.6	17.6	80.8	5.6 of 8 (70.0 percent)
	Item 02	19.9	14.9	65.2	
	Item 03	32.2	32.2	35.6	
	Item 04	13.3	16.2	70.5	
Shapes	Item 09	34.3	26.6	38.9	2.1 of 4 (52.5 percent)
	Item 10	27.5	26.5	46.0	
Number operation	Item 05	48.1	4.7	47.3	4.9 of 8 (61.3 percent)
	Item 06	24.3	3.5	72.3	
	Item 07	25.9	2.1	72.0	
	Item 08	38.0	2.0	60.0	

In the literacy component, learners had the highest competence in recalling names of colors and items of clothing (at 72.5 percent). The least performance was registered in the skill area of production of language, where the mean for the domain was 39.2

percent. In particular, most learners were not able to read any of the simple two syllable words (Item 21, with 67.1 non-masters), nor spell them (Item 22, with 68.5 non-masters).

Even though items on reading and spelling were included in the test, reading is not a terminal skill at Grade 1 as has been mentioned in previous evaluation reports. Assessment of this skill is important in as far as we can document the progress that learners are making towards being able to read. Also, learners have had very little opportunity to practice reading in the current version of the IRI program in that they did not have reading material at their disposal.

As in the previous Grade 1 evaluation, all skill areas of the numeracy component were performed at a mastery level of over 50 percent as indicated by the domain means. However, this cohort was much weaker on the item on counting in twos (35.6 percent of the learners being able to execute the task perfectly compared to 53.8 percent in the 2001 cohort), and on shapes where more than a quarter of the learners could neither recall the name of any of the four basic shapes, nor draw it. The difficulty in this item was partly because of the manner in which the item was scored. Table 9 presents a comparison of performance by sex.

Table 9: Mean comparisons for female and male learners

Skill Area	Female	Male
Production of language	4.65	4.79
Comprehension of language	4.35	4.32
Recall of names	2.97	2.82
Counting and writing numbers	5.61	5.70
Shapes	2.09	2.22
Number operations	4.76	4.98
Overall Test Mean	24.05	24.29

Performance differences by sex were negligible in all skill areas. This is a known strength of IRI programs in many countries where the EDC version of IRI is implemented (source). However, it is important because it has been borne out in all IRI evaluations in Zambia.

2.4.1 Mean scores for Grade 1, 2003 by district and center

Mean scores were calculated by district and locality. Kafue district, comprising only one center (Mimosa/Linda) has the highest mean score of 36.5 of 44 (70.5 percent), followed by Lusaka district comprising of 5 centres as reflected on Table 10. All of the 5 centres performed above the mean even in the previous testing. Lusaka and Kafue districts have an advantage of being close to EBS, hence they may have an advantage of

Table 10: Test Means for Literacy, Numeracy and the Overall Test (2003), by district

District	Test	N	Minimum	Maximum	Mean
Kasama	Numeracy	163	1.0	20.0	12.6
	Literacy	164	0.0	24.0	12.1
	Overall	164	3.0	44.0	24.7
Luwingu	Numeracy	44	4.0	17.0	12.3
	Literacy	44	0.0	20.0	11.5
	Overall	44	4.0	36.0	23.8
Mungwi	Numeracy	92	3.0	20.0	12.6
	Literacy	92	0.0	23.0	11.8
	Overall	92	10.0	42.0	24.4
Mbala	Numeracy	29	3.0	15.0	9.3
	Literacy	29	7.0	17.0	13.6
	Overall	29	10.0	31.0	22.9
Mpulungu	Numeracy	32	7.0	20.0	15.1
	Literacy	32	1.0	23.0	10.3
	Overall	32	8.0	43.0	25.5
Mkushi	Numeracy	57	5.0	20.0	15.2
	Literacy	57	0.0	24.0	12.1
	Overall	57	10.0	43.0	27.2
Kabwe	Numeracy	32	0.0	20.0	10.0
	Literacy	32	0.0	20.0	7.3
	Overall	32	1.0	38.0	17.3
Serenje	Numeracy	56	0.0	20.0	9.8
	Literacy	51	0.0	17.0	7.0
	Overall	57	1.0	35.0	15.9
Chisekesi	Numeracy	74	1.0	20.0	13.1
	Literacy	73	5.0	24.0	14.7
	Overall	74	8.0	42.0	27.6
Siavonga	Numeracy	16	6.0	19.0	12.8
	Literacy	16	4.0	16.0	9.6
	Overall	16	10.0	32.0	22.4
Lusaka	Numeracy	95	6.0	20.0	14.8
	Literacy	95	3.0	23.0	14.9
	Overall	95	13.0	43.0	29.8
Kafue	Numeracy	46	3.0	20.0	16.1
	Literacy	46	1.0	24.0	20.4
	Overall	46	9.0	40.0	36.5
Chongwe	Numeracy	46	3.0	20.0	13.3
	Literacy	46	1.0	24.0	14.3
	Overall	46	9.0	40.0	27.6
Mansa	Numeracy	30	2.0	19.0	11.6
	Literacy	30	0.0	20.0	8.8
	Overall	30	3.0	39.0	20.4
Samfya	Numeracy	60	1.0	20.0	9.4
	Literacy	60	1.0	22.0	6.6
	Overall	60	3.0	33.0	16.0

getting extra support for their IRI centres. Also, their mentors are some of which received training during the pilot phase, who have continued to show enthusiasm and superior performance as IRI mentors. Differences in performance both by locality and by center are captured in Figure 2 below.

Figure 2: Centers, by locality and name, performing above and below 50 percent

12 urban centers above 50 percent	10 of 19 peri-urban centers above 50 percent	14 of 24 rural centers above 50 percent
<ol style="list-style-type: none"> 1. Bauleni 2. Garden 3. Kanyama 4. Kamanga 5. Chainda 6. Musenga 7. Luyeye 8. Mulyambike 9. Buyantashi 10. Tazara 11. Kasama 12. Chiba 	<ol style="list-style-type: none"> 1. Mulambe 2. Mwalushi 3. Paul Kalemba 4. Chimbele 5. Chisekesi 6. Linda 7. Mponda 8. Chibeka 9. Mulilo 10. Mweenda 	<ol style="list-style-type: none"> 1. Kamanampemba 2. Kapoli 3. Chipushi 4. Lwenge 5. Muzizi 6. Mishusha 7. Neverest 8. Cheelo 9. Kasikili 10. Kanchomba 11. Nangombe 12. Mwachilele 13. Nsemba 14. Lusitu
0 urban centers below 50 percent	9 of 19 peri-urban centers below 50 percent	10 of 24 rural centers below 50 percent
	<ol style="list-style-type: none"> 1. Langiboy 2. Chipalila 3. David Ramushu 4. Kasoma Bengweulu 5. Moomba 6. Chitondo 7. Malandu 8. Molombola 9. Mwafuli 	<ol style="list-style-type: none"> 1. Kabwenko 2. Mbulwe 3. Kalombo 4. Mubanga 5. Chechemu 6. Chifunde 7. Misundu 8. Mpandwe 9. Chipembele 10. Chilyabale

When disaggregating data by locality, three categories of urban, peri-urban and rural were used. Peri-urban areas in this case are those that fall within 15 kms of an administrative district. A typical peri-urban community will have at least one government school, in some cases a community school, and other amenities such as electricity and accessible roads. Poverty and/or income levels in peri-urban areas are not as high as in rural areas.

As was expected, the highest mean score was for urban centers 28.1 (63.9%), followed by that of the rural centers at 23.5 (53.4). Peri-urban centers had the lowest mean score at 22.5 (51.1 percent). Figure 2 below presents centers that are performing above or below 50 percent in each of the three localities. All 12 urban centers performed above 50

percent, compared to only 9 of 19 peri-urban centers, contrary to expectations. The rural centers performed well, with 14 out of 24 performing above the 50 percent score.

Centers which performed highest, with a mean of 70 percent or higher were Linda, Garden, Musenga, Nangombe, Tazara Farm, and Chisekesi. Three of these are in Lusaka province, one in Northern, one in Central, and one in Southern province. The spread of high performers throughout the districts suggests that IRI can achieve high results under all different localities, some of which are far from Lusaka where the best education support services are. Center specific factors are usually responsible for high performance, or the lack thereof, as was shown in the previous evaluation. For instance, Tazara Farm in Mkushi is one place where the farm owner has built a shelter for the center, and is paying the mentor K250 000 per month, and is also providing books and uniforms for learners.

To further illustrate the influence of center specific factors on mean performance, four of five centers which were sampled in Southern Province have performed well (Chisekesi, 71.9 percent; Cheelo, 69.0 percent; Kasikili, 68.0 percent; and Kanchomba, 67.3 percent). At 37.3 percent, Chipembele is the only center in this province that performed poorly. Once more, good performance in this province is due to the support given by the church through Fr. Tadeusz of Chikuni Community Radio Station in close partnership with the MoE through the Zonal Inservice provider (ZIP). Centres that have performed well in two or more evaluations are Linda, Garden, and Cheelo. There is sufficient evidence that these are functioning as expected, hence they will not be included in the next evaluation sample.

On the very low end, eight (8) centers performed at 39 percent or below. Four (4) of these are in Central Province (Mbulwe, 22.1 percent; Chifunde, 24.4 percent; Mpandwe, 33.9 percent; and, Moomba, 37.8), two are in Luapula Province, (Kasoma Bengweulu, 25.5 percent; Mwamfuli, 31.5 percent; Chipembele at 37.3 percent, in Southern Province, and Mubanga at 39.9 percent, in Northern Province. In Serenje, Central Province, children did not receive daily broadcasts for a significant amount of time, when they had no shelter under which to conduct classes, hence they missed a sizeable chunk of the lessons.

Some of the problems which may be impacting on performance in Luapula province were noted by test administrators during the IRI assessment visits in August. These included examples where mentors had decided to use only the mentors guide, and not the radio broadcast as required for IRI, and appeared somewhat disinterested in IRI or the learners. In addition, the community itself was ill informed on how the program should be running, and part of this was blamed of the fact that one mentor was not a resident of the community.

2.4.2 Performance by age

The ages of learners in this sample ranged between 5 and 16 years old. However, with the mean age in urban areas being 8.9, compared to 10.6 in the rural areas, a significant⁵ difference was observed when age was disaggregated by locality. The first age category which accounts for about 10 percent of the learners was that of children who are yet to reach the official school-going age and could be considered too young to be in IRI centers. The second age category of 7 to 13 year olds captured those who are the official age for primary education. The third and last category, about 3.1 percent, was that of 14 to 16 year olds, learners who would under normal circumstances be pursuing secondary education. Significant differences were also observed when the age categories were used to disaggregate performance as reflected in Table 11.

Table 11: Performance by age category

Age Categories	Test	N	Minimum	Maximum	Mean	Std. Deviation
6 years and under	Numeracy	85	1.0	19.0	8.1	4.6
	Literacy	81	0.0	22.0	8.2	5.8
	Composite	85	1.0	37.0	16.0	9.0
7 thru 13 years	Numeracy	708	0.0	20.0	13.0	4.5
	Literacy	707	0.0	24.0	12.1	5.6
	Composite	710	3.0	44.0	25.0	8.7
14 and above	Numeracy	25	6.0	20.0	14.7	3.4
	Literacy	25	3.0	24.0	12.6	5.7
	Composite	25	10.0	41.0	27.3	8.1

As with the 2001 scores, the results showed an increase in performance as age increased. The mean differences were significant⁶. The standard deviations were also increasingly narrower, which means that with increasing age, learners were becoming more competent on the skills that were tested. Another conclusion that can be inferred from the fact that standard deviations were narrower for the numeracy subtest, in comparison to those of literacy skills subtest within each age group, is that examinees were more variant in literacy than in numeracy. The data seems to suggest that age has to be taken into consideration in IRI if returns are to be maximized. This finding will be important for future enrolment policy and practice as more IRI centers are organized.

2.4.3 Comparison with the 2001 cohort

Table 12 below includes, for comparison, performance scores for test compared to the 2001 performance. Even though the scores show internal consistency, performance in 2001 was superior to performance on the current test. This is partly due to the fact that there were a lot more IRI centers listening to Grade 1 broadcasts in 2003, which means

⁵ $t = 3.89, p = .00$

⁶ Composite: $F = 14.3, p = .00$; Numeracy: $F = 23.5, p = .00$; Literacy: $F = 5.8, p = .01$, all at $df = 341$

that standardization of procedures, and supervision of the learning center was, at best, minimal.

Table 12: Test Means for Literacy, Numeracy for 2001 and 2003

Content	Sample size		Mean	
	2001	2003	2001	2003
Numeracy	405	826	14.3	12.6
Literacy	405	821	13.6	11.7
Total Test	405	828	27.9	24.2

Differences between the test scores from one year to the next are to be expected, at least in the formative years of the program when systems have not yet stabilized. However, there is need to have performance standards against which comparisons from year to year can be made. An opportune time to articulate these would be with the newly revised Grade 1 curriculum and/or programmes, there should be benchmarking against which performance from year to year can be compared. To this end, cut-off points that define different levels of performance should be defined. A psychometric approach that is a hybrid of mentors and teachers' judgments on individual item content, and judgments on examinees test scores would be preferable. More experienced teachers from community schools which tune in to the IRI programs would be invaluable to this exercise since judgments of mentors alone could be challenged on the basis that they are not qualified teachers.

2.5 Impression on Effectiveness of IRI: Mentors and parents and other stakeholders

Data on views and impressions of mentors and parents were collected in a variety of ways. First, EBS receives reports from Provincial Outreach Coordinators on a monthly basis, and from various EBS/EDC monitoring activities. Views of mentors, parents and other stakeholders are expressed in many of those reports. Secondly, data was collected through a mentor self-administered questionnaire during testing time. A total of 110 mentors responded to the questionnaire. Thirdly, focus group meetings were also held for the parents. Where possible, mentors were asked to join the focus group meetings.

2.5.1 Mentors

About 23 percent of mentors were female compared to 77.3 percent male. The age of the mentors ranged from 22 to 66 years old. On average, mentors had given 2.1 years of service. About 7.5 percent of mentors had served IRI since its first cohort in 2000, while 34.7 percent were in their first year. Two of 102 mentors had received 19 days of training, while 26.5 percent had received no training at all. On average, mentors received 4.6 days of training as shown in Table 13.

Table 13: Mentors' years of service and mean days of IRI training

Years as mentor	N (%)	Minimum	Maximum	Mean	No training (%)
1 Year	32 (34.6)	0.0	07	2.3	50.0
2 Years	35 (32.7)	0.0	10	3.5	22.9
3 Years	24 (25.2)	0.0	19	7.6	04.2
4 Years	08 (07.5)	6.0	15	10.3	00.0
Overall	102	0.0	19.0	4.6	26.5

With an average of 10.2 IRI training days, the longest serving mentors are also the best prepared. As the table indicates, all of the veteran mentors received at least a full week of training at the beginning of the IRI program in 2000. With about 50 percent of mentors having received no training at all, training could partly explain the drop in performance scorers over the years (overall mean of 24.2 in 2003, compared to 27.9 in 2001, and 32.3 in 2000). In addition to the age of the learner, mentor training seems to be the only other variable that introduces significant variation in performance. These data demonstrate two points; namely, the worth of mentors in the success of the IRI programme, and the value that can be added to the learning process by exposing the mentor to thorough training. Indeed, the centrality of mentors to the success of IRI has been confirmed in all evaluations, with recommendations made to curb mentor attrition.

Apart from the training issues, mentors were asked about materials and support that is available to her/him through learning materials and the support given to her/him by the community, as well as the effectiveness of IRI. The majority of mentors thought their centers were successful centers (54.6 percent), while 3.6 thought their IRI program was not successful. More than 80 percent of the mentors believed IRI centers were doing just as well as GRZ schools, if not better.

2.5.2 Community/parent participation

Parents are overwhelmingly in favour of the IRI program for a variety of reasons, the most compelling being that it provides access to education, and an opportunity to poor and vulnerable children. Other reasons were the low cost implication of learning through IRI, cutting on the distances that children have to walk to regular schools, and community ownership of the program. For instance, in Siavonga the community wants to be in-charge of IRI themselves, and does not want government to interfere with "unreliable" assistance. In fact, community members cited "unending teacher strikes" as one of the reason for sending children to IRI learning centers, even in some places where there is a government school.

However, parent participation and/or support in IRI is low, with only 30 percent of the parents assisting the mentor directly through offering money, food, and some household items. What emerged though is that in many cases, communities agreed in principle that they should make a contribution. However, they ended up not managing to do so. In a number of cases, it turned out that they stopped making cash contributions after government declared free education.

There were centers with systematic assistance for mentors. In Mkushi, where IRI centres were opened in farm blocks centers and mentors were supported by farm owners, both financially and materially. Some mentors were being paid between K200, 000 and K250, 000 per month. One farmer in the farm block has put a permanent structure running Grades 1 through 4. The learners are expected to go to the nearest government school at the completion of the foundation phase. The farm owner is also providing uniforms for learners. Assistance from farm owners was also reported in Kalambo, Northern province where a farmer supports by providing transport, exercise books, radio and pays two teachers. Interestingly, this appears to be both a strength and a weakness as it was also identified as a threat due to the fact that the white farmer bears all payments.

A finding of this evaluation from community focus groups confirms Siaciwena (2002) that community participation is best coordinated through unambiguous structures such as IRI committees. Where committees exist, IRI support activities are easily coordinated as in the case of Chikuni, where all centres have committees that were functioning well (Siaciwena, 2002). To the majority of parents and community members, the strengths of IRI included having their mentor on government payroll and community provides free housing as is the case in Mbala; provision of 'uniform learning' (from the radio teacher); the ability to read, write and speak in English; children that are well behaved and respectful; improved hygiene; reduction in the number of potential street children, and in incidents of stealing the absence of teacher/mentor strikes.

The greatest threat to the IRI program was deemed to be minimal support offered to mentors by communities. Most parents and community members expressed a fear that mentors would get discouraged and stop teaching, thereby resulting in closure of centres and the end of opportunities for their children to learn. As one person put it, "that will be the end of the children's education" Other threats included lack of ownership; lack of structures, "a place to call our own", and hence, constant fear of eviction, inclement weather; malfunctioning radios; and early marriages of the girls, as reported in Muzizi and Nchecama (where there were only 4 girls in G4). Some parents/communities expressed uncertainty about the future of IRI, as in Government running out of money to pay ZNBC. Hence they were reluctant to support it.

3.0 CONCLUSION AND RECOMMENDATIONS

EBS has systematically conducted evaluations of the IRI program at the Grade 1 level in order to track the demand and/or growth of IRI. The current evaluation was especially important since the Zambian context has changed to include restructuring and reorganisation of the MoE, and introduction of free primary education (FPE). With the introduction of FPE, IRI is emerging as a necessary partner and alternative to the school system in communities where the Zambian education system is overwhelmed, and the only available opportunity for accessing basic education in others.

The evaluation is also important because it marks the end of the funding phase that saw the birth of IRI (its pilot and the rolling out of IRI to the rest of the country), and ushers in a new phase. Most of evaluation findings speak to the same issues that were raised in earlier reports, issues on which recommendations for action were made. Hence in this section we consolidate the previous recommendations, examine which ones have been acted upon, whether or not those that are yet to be acted upon have not been overtaken by events, and recommend accordingly. We also raise new issues to be considered in the planning of the next phase of IRI.

3.1 Previous Recommendations

The table below indicates the overlaps in the recommendations, with respect to issues such as the development of regulatory measures for communities and/or organizations that want to start IRLCs; development of grade level performance standards of achievement; delineating mentor profiles and putting developing incentives for mentors; and developing a monitoring and evaluation framework which stipulates roles and responsibilities of the different monitors.

3.1.1 Demand of IRI

The August 2001 evaluation identified the need to introduce some regulation in establishing new centers to relieve mentors of the burden of having to attend to highly heterogeneous groups of learners. The criteria that has been stipulated in the IRI sensitization literature by EBS include measures such as recruiting a mentor and devising means to support him/her, constituting a village IRI committee, having a shelter, buying a radio and a chalkboard, and pledging support for the center. This criteria does not address the issue of regulating admission to a stipulated age group of learners, such that IRI is not watered down as mentors struggle to accommodate unintended audiences.

We reiterate our earlier recommendation that there needs to be some regulation in establishing new centers. The regulatory framework should address issues such as the minimum number of learners that should be assembled before a center can start operating, the age of the learners, and the type of support that centers will qualify for,

Figure 3. Recommendations from 2001 Grade 1 Evaluation

RECOMMENDATIONS, LETSHABO & KARIUKI, 2001	CORRESPONDING RECOMMENDATIONS SIACIWENA, 2002
Demand of IRI: Articulate a simple regulatory IRI strategy that provides the minimum requirements and criteria that should be met for a community to organize a formal learning center.	<i>Recommendation 6:</i> Develop criteria for certification process for the interactive radio instruction learning centres. Once these are established small grants should be made available to IRLCs.
Attendance: Articulate a mentor-friendly strategy for tracking attendance of learners at centers, which should include providing an official register to be collected at the end of each grade.	
IRI Learner Profile: Delineate a profile for an IRI learner, the ideal “out-of-school” learner for which the program was initially designed, such that the IRI service should be made available to those who need it the most.	
Student Learning: Design a standard setting exercise that would determine cut-off scores for different levels of mastery (and/or proficiency) to provide consistent descriptions of learning achievement, and yearly comparisons.	<i>Recommendation 13:</i> Decide whether the program will expand to Grade 7, and if so, appoint working group to make proposals on the assessment and integration of IRI Grade 7 learners into the formal school system.
Mentor Profile: A deliberate attempt should be made to delineate the profile of an ideal mentor for the IRI program, his/her training needs, and a mechanism to improve the chances that mentors are retained.	<i>Recommendation 21:</i> Make mentoring an advantage in admission to teacher training colleges. <i>Recommendation 22:</i> Improve all aspects of mentor training and award MOE certificates
Effectiveness of IRI: EBS and EDC should train mentors on how to keep a journal of critical events (aspects of the program that work well, and those that do not, as well as certain occurrences that demonstrate that learning has taken place), to be used in monitoring, formative, and summative evaluations of the program. M & E Framework: Develop a cost-effective and sustainable monitoring and evaluation framework, possibly one that is sustainable, and that can be institutionalized into the operations of EBS.	<i>Recommendation 7:</i> Define monitoring and evaluation roles and responsibilities in light of decentralization of education services; create clear channel for communicating and utilizing data. EBS should not take leading role in M&E. <i>Recommendation 8:</i> MOE should build capacity for monitoring IRI learning centres by allocating money to it in the budget; and by building appropriate expertise in monitors.
IRI Database: A database of center, student and mentor profile be developed. It will be more desirable and efficient than the current spread sheet that is used.	

depending on their circumstances. Siaciwena (2002) recommended that centers could then qualify for a small grant. This is desirable. One of the functions of the EBS based POCs could be to solicit support from various stakeholders, for specific centers, in cash or kind.

Another issue of demand is that of the higher grades. While it has been demonstrated in this evaluation that participation at Grade 5 had dropped considerably, a new challenge for IRI is whether or not to develop new programs for Grades 6 and 7. Data that is collected from this evaluation seems to suggest that it will not be cost-effective move for EBS. However, a policy decision about the envisaged role of IRI in the overall education system could shape the direction to take, both for EBS and other MOE departments.

3.1.2 Attendance

With the appointment of POCs to assist MoE to supervise center activities more closely, there will be increased monitoring of attendance. EBS has had to provide attendance registers to IRLCs. However, in order to ensure that mentors are not spending valuable instructional time on an administrative task of taking attendance, a strategy on taking attendance has to be negotiated with mentors. One strategy would be to involve the children in higher grades in this task; that is, assign them days of the week they have to count their classmates, and then approach the teacher after the lesson to report who was absent.

3.1.3 IRI Learner Profile

The IRI system is now being overwhelmed by new audiences, sometimes at the expense of the out-of-school children. While it may be counter productive to discourage other users to take advantage of the IRI airwaves, EBS should rationalize the assistance and support that they can offer vis-a-vis their capacity. Policy positions and other consideration on this issue should give clear priority to out-of-school disadvantaged learners, however.

3.1.4 Student Learning

Learners have progressed well through the five grades for which there are IRI programs. Comparative studies have shown that IRI learners were performing just as well as regular school learners, if not better at Grade 2 and 4 (ECZ, 2002). In order to earn IRI more support and credibility as a necessary alternative for about 600 000 Zambian children who are still left out of the school system, EBS should work more closely with the relevant MOE department to articulate grade level stands and/or competencies that can be used to ensure that the education opportunity of IRI learners is comparable to that of school learners. This effort will naturally culminate into integration procedures for all grade levels, school learners who want to join the school system. This is an extension and more comprehensive approach than suggested in Siaciwena, 2002.

3.1.5 Mentor Profile

As shown in Figure 3, an earlier evaluation had recommended that a deliberate attempt should be made to delineate the profile of an ideal mentor for the IRI program, his/her training needs, and a mechanism to improve the chances that mentors are retained. An increased number of mentors who have gone on to teachers training colleges, some with the

assistance of DIPs. EBS needs to track information on training opportunities for mentors, and make a concerted effort to support applications of mentors. In addition to this, all mentors should be exposed to yearly in-service training, and be awarded a MOE certificate in recognition of the training and their experience as suggested by Siaciwena, 2002. Moreover, the policy position on the role of IRI should articulate profile and preparation, as well as devise strategies aimed at retaining mentors.

3.1.6 Monitoring and Evaluation Framework

While there are several loosely coordinated monitoring and evaluation activities going on, M & E has to be institutionalized into EBS operations. This should be done within the overall task of developing a management system for the different EBS functions.

3.2 Siaciwena (2002) Recommendations

The USAID commissioned evaluation of August 2002 focused on different EBS processes as they impact on IRI delivery. In addition to the recommendations on IRI instructional systems, the recommendations below focused on support systems. We isolate a few for emphasis and discuss them broadly under lesson development, broadcast production, and IRI management as shown in Figure 4 on the next page.

3.2.1 Lesson development

Lesson development activities have so far been undertaken by EBS staff supported through technical assistants. EBS staff have done a commendable job, though the process continues to evolve and improve. While it is necessary to have on the job training to perform certain specific tasks it is even more desirable to present candidates for long-term training, people who will be empowered to direct the EBS IRI program in the future. Selected EBS staff could undergo in-depth training in aspects of curriculum and instructional design to make the IRI lessons more effective. Alternatively, qualified curriculum specialist should be relocated to EBS where they can receive in-house and/or professional training in delivering the curriculum through the medium of radio.

3.2.2 Broadcast production

EBS has recently acquired equipment through USAID funding. With proper training, the available equipment is sufficient for the production activities. The weakest link in the broadcast production process is two pronged. First, the studio technicians need to be trained so as to update their skills. Human resource issues need to be complemented by appointing relevant personnel in supervisory roles as was suggested by Siaciwena (2002). Secondly, manuals for the production processes need to be updated, with sufficient time being allowed for quality assurance.

Figure 4: Additional recommendations of August, 2002

Improving Lesson Development
<i>Recommendation 1, 2 and 27:</i> EBS should train writers to be more creative and to produce interactive radio lessons; review work schedules for writers; avail more opportunities for formative evaluation; identify CDC curriculum specialists to work with writers. EBS should also train or use people who speak clearly as radio teachers; improve the Lifeskills component by increasing time for the segment, providing lifeskills training for mentors, and more teaching aids
Improving Broadcast Production
<i>Recommendation 3 and 4:</i> Provide necessary equipment for studio production and maintenance services; develop a workable production schedule, and develop studio procedures to ensure systematic handling of scripts and tapes; hire a studio manager to supervise technicians and other studio staff.
Community participation
<i>Recommendation 5:</i> Continue to sensitize communities on IRI and their responsibilities; create and clear communication channels between EBS, MOE and the community
Capacity to manage the IRI program
<i>Recommendation 9:</i> Develop and institutionalize within EBS, an IRI management system. <i>Recommendation 10:</i> Create conditions to enhance job satisfaction and retention among EBS staff.
IRI and other MOE Departments
<i>Recommendation 12 and 16:</i> Institutionalize IRI within MOE, identify roles for MOE departments who are strategic partners; office of PS should define roles of MOE departments in promoting the IRI, and provide guidelines

3.2.3 IRI Management

Siaciwena (2002) has recommended the institutionalization of IRI within MOE. This process can logically begin by articulating a policy position on IRI as already mentioned above. Once the policy is articulated, the other recommendation would fall into place; that is, to identify roles for MOE departments who are strategic partners, and for the office of PS to define roles of MOE departments in promoting the IRI.

3.3 Summary Recommendation

In light of a number of actions that still need to be followed up from previous evaluation studies, this evaluation makes only one recommendation; *that EBS should take advantage of the MOE restructuring exercise to streamline IRI activities, and to devolve some of the functions assumed in the pilot and roll-out phase to the relevant MOE departments. These functions include training of mentors, outreach, assessment of achievement, and monitoring and evaluation. These activities will create an enabling environment for the MOE to develop a responsive policy position on the role of IRI in the overall provision of basic education in Zambia.*

4.0 APPENDICES

- Appendix A: Methodology for evaluation
- Appendix B: Data collection sheet for students' profile
- Appendix C: Content Map for Grade 1 English
- Appendix D: Content Map for Grade 1 Mathematics
- Appendix E: Test Blueprint for Grade 1 English
- Appendix F: Test Blueprint for Grade 1 Mathematics
- Appendix G: Test Plan for Numeracy and English Literacy for Grade 1
- Appendix H: Grade 1 Numeracy and English Literacy Test
- Appendix I: Training Notes for the Administrators
- Appendix J: Guidelines for Test Administrators
- Appendix K: Mentor Questionnaire
- Appendix L: Focus Group Questions

Appendix A: Methodology

Sampling

In August 2003, at the time of the testing exercise, the reported population of Grade 1 IRI learners was 12 461 learners, attending 516 centers in all nine provinces. The evaluation strategy stipulated the use of population parameters to describe the profile of learners in the centers, in particular their sex, age, who their guardians are, and whether they have any living parents (orphan status), and sample statistics for the achievement scores. While population parameters will be used where they are available, most of the variables will report sample statistics.

A three step sampling design was used. First, a purposive sample was drawn from 5 of 9 provinces, with provinces that had more centers being preferred over those that had less centers. Secondly, 55 centres were sampled randomly from a total of 516. Twelve centres are located in urban areas, 24 in rural communities, and 19 in peri-urban areas⁷. These centers had a total of 992 learners. Thirdly, 16 learners were sample from The table below shows the population of learners and sampled size per province.

Evaluation Sample: Grade 1 IRI Learners in 2003

	Population of centers	# of centers Sampled	Population of learners per province	# of learners sampled per province
Northern	82	24	2 364	384
Luapula	54	06	1 286	96
Central	96	10	2 207	160
Southern	26	06	978	160
Lusaka	46	09	1 804	192
TOTALS	304	55	8639	992

The sample of 992 was 11.5 percent of the population in the 5 provinces, and 7 per cent of the total Grade 1 population. The number that actually got tested was 828. This is because in some places, there were fewer than 16 learners, the number that was to be tested per centre.

Test Development

IRI methodologies emphasize a communicative learning approach, where instead of using the traditional learning approach of compartmentalizing into subject areas, presentation of new knowledge and skills is integrated. This has made it possible to develop a test of literacy and numeracy skills, that was packaged in the manner that

⁷ Peri-urban areas in this case are those that fall within 15 kms of an administrative district. A typical peri-urban community will have at least one government school, in some cases a community school, and other amenities such as electricity and accessible roads.

learners are familiar with from their daily lessons, and presented to them orally. This section describes the rationale for developing a literacy and numeracy achievement test for Grade 1. The mastery test that is used in this evaluation was developed for the evaluation in 2000, and revised in 2001. The test development process for its development included content mapping, test blueprinting, developing a test plan, item writing and pilot testing. The test administration procedure is described, followed by a presentation and discussion of test results.

Content Mapping

The test development process commenced by a content analysis for Grade 1, performed by the Senior Research Officer with the Examinations Council of Zambia and a test development specialist. Documents that were analyzed are the Mathematics and English syllabi which specify terminal as well as instructional objectives for the primary level, and the mentors' guide for the lesson broadcasts. Two content maps were developed, one for English and another for Mathematics. In these, instructional objectives that specify the content for the grade level were classified in a two-way matrix of terminal objectives by topic or skill area. In the absence of grade-level reading lists that usually indicate the reading levels of learners, the mentors' guide was particularly useful in that it specifies new vocabulary and the numeracy skills that are presented in each lesson. It also formally specifies the life skills content, a deliberate effort to advance attitudinal learning alongside the cognitive skills that children have to master at this formative stage of being introduced to formal learning.

In the content map for English instructional objectives are classified into a two-way matrix of twelve Grade 1 terminal objectives by the skill areas of reading, writing, speaking, listening, phonics and spelling (see Appendix B). Out of the 106 instructional objectives that make up the content for Grade 1 English, 82 are terminal. These are all in the areas of listening and speaking. The remaining 24 that fall in the areas of reading and writing are developmental objectives to be mastered in later years.

The first three terminal objectives for the primary Mathematics course were deemed terminal for Grade 1. Learners at this level are expected to master the skills of naming and classifying objects according to given conditions, demonstrate understanding of the concept of number and numeration, and perform the basic operations on numbers and other simple measures. All the 22 instructional objectives which are specified in the content map are terminal, 10 of which require learners to demonstrate understanding of the concept of numbers and numeration (see Appendix C).

Subject Blueprinting

Test blueprints were developed for English and Mathematics (Appendices D and E). In these, instructional objectives were mapped into a two-way matrix of content topics by level of cognitive complexity using Bloom's taxonomy⁸. Even though the application of

⁸ Bloom's taxonomy was the classification scheme that is used by the Ministry of Education.

what was learnt in both English and Mathematics is expected at this level, greater emphasis was placed on acquisition of new knowledge and comprehension of concepts for both subjects. The higher cognitive levels of Bloom's taxonomy (analysis, synthesis, and evaluation) were not featured at all.

Test Planning

One test plan of literacy and numeracy knowledge and skills was developed. Once more, a two-way matrix of topic/skill area by cognitive level was used. Entries in the body of the test plan were instructional objectives from both the Mathematics and English syllabi (see Appendix F). The skills area of the test plan (first column) presented terminal objectives, where the first four skills was a summary of the 13 terminal objectives of Grade 1 English. The last three skills (in italics) reflect the mathematics terminal objectives that are suitable for Grade 1.

The optimal test length that was decided upon by the curriculum and test development specialist was about 20 items, taking into consideration the method of administration, and the time that it would take to administer the test. The plan reflected a total of 22-item test consisting of 12 literacy items and 10 numeracy items, sampled from 20 instructional objectives. Four items were planned at the knowledge level, 13 at comprehension, and 5 at the application level. The last column of the test plan stipulated the number of questions to be tested per skill, and the different levels (using Bloom's taxonomy) at which the items for each skill would be tested. Instructional objectives that were sampled for testing are presented in bold in the body of the test plan.

Test Construction

The purpose of the test was to assess and evaluate if learners have mastered basic literacy and numeracy skills, and whether they could understand simple communication at the end of the Grade 1 course. The guiding principle during test development was that assessment procedures should match the intentions of each learning target, hence the behaviors which were elicited from the learners included recalling certain facts, as well as performing certain tasks. For instance, the intention of the learning targets on language during the early stages of learning is that learners should comprehend language and begin to produce simple language. Their comprehension of language in the lessons is demonstrated by the acting out simple instructions, hence the assessment of language skills comprised mainly of requesting them to perform actions when given simple instructions.

At least one item was constructed for the 20 objectives that were sampled from the test plan. The test development specialist was mainly responsible for generating the test items. The ECZ Senior Research an individual with a thorough knowledge of the intended curriculum, reviewed these for content coverage and readability. Members of

the IRI team who are most conversant with the way the radio lessons were structured and delivered also participated in the item review.

For most objectives it was possible to construct a set of parallel items from which the test administrator would select the item to present to the learner. These items were pilot tested by 4 test administrators in 2 centers in Lusaka. Pilot testing assessed whether the questions elicited the intended behavior/skills, whether the correct difficulty levels in terms of content and language were maintained, the amount of time it took to administer the test, and whether the proposed administration procedure was reasonable and adequate.

Modifications that were made after pilot testing included simplifying content for some of the questions, recasting other questions in simpler language, clarifying certain tasks, and inserting instructions, also to increase clarity on the administration procedure. Table 4 below produces a summary of intended learning targets (also reflected in the test plan) and the corresponding test items in the final version of the test. The final version of the test consisted of 22-items (see Appendix G).

Skill areas and corresponding test items for Grade 1 Test, 2001

Skill Area	Intended Learning Target	Test Items
Language	1. Recalling names	11, 12,
	2. Simple comprehension of language	13, 14, 15, 19
	3. Production of language (speaking)	16, 17, 18
	4. Production of language (reading)	20, 21
	5. Production of language (writing)	22
Numeracy	1. Counting and writing numbers	1, 2, 3, 4
	2. Naming/classification/comparisons	9, 10
	3. Number operations	5, 6, 7, 8

Twelve (12) items assessed language skills, while 10 items assessed numeracy skills. Translation into local languages was allowed for the 10 items that tested numeracy. In the interest of keeping the test short and simple, no items were included for the lifeskills component. Also, the objectives for the lifeskills component are not expressed explicitly in the curriculum, which means that a different strategy will have to be used to assess whether children are learning in this area.

Other instruments

Other instruments that were designed for this evaluation are mentor and focus group questionnaires. The mentor questionnaire was a self-administered instrument, while the focus group was filled by a member of the testing team

Test Administration

Testing was conducted in August, 2003 in 55 centers, 24 of them located rural areas, 12 in urban areas, while 19 were located in peri-urban areas. 10 of the centers were part of

the sample in the 2001 evaluation. Test administration began with the identification of test administrators both at national and provincial levels. The officers identified were Outreach Advisor, Monitoring and Research Advisor, IRI Focal Points Persons, District Inservice Providers (DIPs), Assistant DIPs, POCs, Senior Producers at EBS and Peace Corps volunteers. Test administrators underwent a one-day training in test administration so as to equip them with knowledge and skills and also to have a common understanding of the evaluation exercise and its importance. Each test administrator was required to arrive at the center in time for the broadcast, test the learners and record the responses accordingly, as well as submit a report for the testing visit

Interpretation of test scores

The purpose of this test was to monitor if learning is taking place and describe the learning patterns, first, for the whole group of Grade 1 learners, and secondly, for subgroups. Subgroups that have been identified for analysis include males, females, rural learners, urban learners, learners in specific centers, among others. The test is therefore suitable and valid for monitoring learning at a group level, but not equally valid for describing achievement for individual learners.

In order to enhance the validity of the test as a monitoring tool, content domains or skill areas have been clearly delineated, hence it is possible to calculate means for domain "subtests". This is the most valuable information for our purposes because conclusions can be made confidently about skill areas where students seem to have achieved the most, and where they have been found to be weakest. Data on individual items on the test is only useful to the extent that it provides an indication of what learning difficulties learners could be having on specific content matter that each item is testing. However, it has also been possible to draw conclusions about mastery for the group of learners at the item level. The test was built such that for most items, administrators could randomly sample the item to be presented from a list of parallel stimuli (see Items 1, 2, 5, 6, 7, 8, 11, 12, 13, 17, 18, 19, 20, 21, 22). The implication of this practice is that conclusions on content as presented in individual items were made not only on one item, but on a number of such items. The other strength was that there were different combinations of items that were presented to the students, which practice increased the validity of the test for making mastery decisions.

As a tool for monitoring learning and making summative evaluations about the learning environment, the test has performed its intended purpose adequately. Conclusive evidence on performance in content specific items at the individual student level would be derived from a different process, which necessitates that there be more than just one item on each topic area, that sampling of items be adequate, that the test be of a suitable length, and that testing time be more suited to learners at the Grade 1 level. The usual practice for such individual testing is that the achievement test for the whole curriculum is broken down into manageable subtests that are administered in several sittings.

Appendix C: Content Mapping for Grade 1 - English

Terminal Objectives	Listening and Speaking	Reading	Phonics	Writing	Spelling
1. Understand and respond to teacher's instructions	7.1				
2. Give instructions	7.2 7.3				
3. Use language in social interaction, classroom organization, correction, and simple explanations	1.1 4.1 4.2 8.1 - 8.5				
4. Answer questions					
5. Make statements	2.4 5.1 5.2 5.4 5.6 - 5.10 6.2 - 6.4				
6. Ask questions	3.1 - 3.16 5.3 5.5				
7. Ask for information	6.1 8.8				
8. Use simple descriptive language	1.2 1.4 - 1.9 2.1 - 2.3 2.5 - 2.8				
9. Listen and demonstrate understanding					
10. Use language simple in interactive activities	6.2 - 6.4 9.1 - 9.9 10.1 - 10.7				
11. Demonstrate understanding					
12. Pronounce words	11.1 13.1 - 13.4		C1 C2		

Appendix D: Content Mapping for Grade 1 - Mathematics

Topics /Terminal Objectives/	Naming Classifying objects and numbers according to given condition	Demonstrate understanding of concept of number and numeration	Perform basic operations on numbers and other measures
Sets	1.1-1.2	1.3-1.5	
Numbers	2.1; 3.1	2.2-2.3	2.4
Completing addition and subtraction of number sentences up to 100		4.1	4.1; 5.1
Shopping Activities			6.1
Counting		7.1; 10.1	10.1
Telling time	8.1		
Comparisons		9.1 - 9.2	
Shapes	11.1		11.2

Appendix E: Test Blueprint for Grade 1 - English

Topics	Knowledge	Comprehension	Application
1. Identifying and classifying	1.1 - 1.2 1.3 - 1.19	1.20	
2. Describing narrating and reporting	2.1 - 2.2 2.4	2.3 2.5 - 2.7	
3. Finding out (inquiring)	3.1 - 3.16		
4. Denying, confirming and correcting		4.1 - 4.2	
5. Expressing and finding out intellectual attitudes		5.1 - 5.4 5.6 5.8 - 5.10	5.5 5.7
6. Expression personal meaning		6.2	6.1
7. Getting things done		7.1 - 7.3	
8. Using language socially	8.1 8.3 8.4	8.2 8.5	
9. Expressing concepts and relationships			9.1 - 9.9
10. Talking about quality and quantity	10.1 10.2	10.6 - 10.7	10.3 - 10.5
11. Learning about language			11.1 - 11.3
12. Speechwork and phonics		13.1 - 13.2 13.4	13.3 13.5C1-C2 (P)
13. Reading	1	2 - 5	
14. Writing and spelling			1 - 7 (W) 1 (SP)

Appendix F: Test Blueprint for Grade 1 - Mathematics

Terminal Objectives/ Topics	Knowledge	Comprehension	Application
1. Sets		1.1 - 1.5	
2. Numbers		2.1 - 2.3	2.4
3. Naming numbers (0 - 10)	3.1		
4. Completing addition and subtraction of number sentences up to 100			4.1
5. Addition and subtraction			5.1
6. Shopping Activities			6.1
7. Counting in tens and ones		7.1	
8. Telling time	8.1		
9. Comparisons		9.1 - 9.2	
10. Counting in twos up to 100		10.1	
11. Shapes	11.1		11.2

Appendix G: Test Plan: Basic Literacy and Numeracy

Skill Area	Knowledge	Comprehension	Application	Number of items
Recall of names	1.1-1.2 1.4 - 1.9; 1.10-1.11 ; 1.12-1.16 ; 1.18-1.19	1.17 ; 1.20		3 (2K, 1C)
Production of Language (Speaking)	2.1-2.2; 2.4; 3.1-3.16; 8.1; 8.3; 8.4;10.1-10.2	2.3 ; 2.5-2.7; 4.1-4.2; 5.1-5.4 ; 5.8- 5.10; 7.1-7.3; 8.2; 8.5; 10.6- 10.7;13.1-13.2; 13.4	5.5; 5.7; 6.1; 9.1- 9.3 ; 9.4-9.9; 10.3-10.5; 11.1-11.3 ;13.3;13.5;	4 (2C, 2A)
Production of Language (Reading)	1	2 ; 3; 4; 5		2 (1K, 1C)
Production of Language (Writing)			1; 2; 3; 4; 5 ; 6; 7	1 (A)
Comprehension of Language		6.2 ; 10.6; 10.7		2 (C)
<i>Counting</i>		7.1 ; 10.1		3 (C)
<i>Number Operations (addition, subtraction and multiplication)</i>			4.1 ; 5.1 ; 6.1	3 (A)
<i>Classification and Comparisons</i>	3.1; 11.1	1.1-1.5; 2.1 ; 2.2; 2.3; 9.1-9.2	2.4; 11.2	3 (1K, 1C, 1A)

Explanatory Notes:

1. The skills area of this test plan (first column) presents a summary of terminal objectives. In the first four skills the 13 terminal objectives of Grade 1 English are restated in summary form. The last three skills (in italics) reflect the mathematics terminal objectives that are suited for Grade 1. The entries in the body of the test plan are instructional objectives from both the Mathematics and English syllabi.
2. The last column of the test plan stipulates the number of questions to be tested per skill, and the different levels (using Bloom's taxonomy) at which the items for each skill will be tested. This is a 22-item test consisting of 12 literacy items and 10 numeracy items. There are 4 items at the knowledge level, 13 at comprehension, and 5 at the application level.
3. Instructional objectives that are sampled for testing are presented in bold in the body of the test plan. From these, several items were set. The administrators will typically present one item to the learner, and a second item if the administrator is not certain about mastery/non-mastery of the objective.

Appendix H : Test of Mathematics and English Language Skills

GRADE 1

TEST ADMINISTRATION SCRIPT

Instructions:

- *Please read this information before the test and seek clarification where necessary.*
- *Everything that appears in italics in the test is for the information or direction of the mentor/test administrator. Words that are not in italics are to be read out to the learner.*
- *Administer the whole test (all questions) to each learner. The test is to be administered to one learner at a time, away from other learners.*
- *The test item is to be presented to the learner a maximum of two times.*
- *Translation is allowed on all numeracy items except 9 and 10.*
- *Use the test administration grid. Record a capital **C** against the objective to indicate that the correct response was given. Write **PC** for a **partially correct** response, or **W** for a **incorrect** response, or a **NR** for **non response**.*

Hello, What is your name?

How are you _____? I am well too. How old are you? Good.

Now, I am going to ask you a number of 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 the first question:

Question Stem	Selection	Instructions
1. Count from _____	13-33; 21-41; 37-57; 41-51; 73-93; 35-55; 70-90; 29-49; 48-68; 11-31; 14-34; 25-55; 79-99; 62-82; 12-32	Select and present one of the items. Allow a second chance if necessary
2. Now write _____	10 -99	Ask them to write any two digit numeral from 10-99 (inclusive).
3. Count in twos from 2 to 10		Allow a second chance if necessary
4. Count in tens from 10 to 100		Allow a second chance if necessary
5. _____ is the same as _____ e.g., $7+6 = 6+7$	$7+6$; $9+4$; $6+7$; $4+7$; $5+5$; $6+4$; $9+8$ $9-4$; $7-5$; $8-3$; $6-1$; $9-2$; $8-7$; $7-3$	Ask them to complete the statement, presenting both addition and subtraction
6. Add the following numbers	$7+6$; $9+4$; $6+7$; $4+7$; $5+5$; $6+4$; $9+8$	Present in horizontal orientation on flash cards
7. Subtract _____ from _____	$9-4$; $7-5$; $8-3$; $6-1$; $9-2$; $8-7$; $7-3$	Present in horizontal orientation on flash cards
8. A man has K____ and buys _____ for K____. How much will you give back?	K500-K200; K700-K300; K900-K600 K400-K200; K600-K100; K200-K100	Present a story involving money and giving change. Allow a second chance if necessary
9. What is the name this shape?		Present a circle, square, triangle, and rectangle in any order
10. Now, draw a circle; a square; a triangle; a rectangle		Conceal the shape and ask learners to draw them from memory

I am now going to ask the remaining questions in English. Please don't be worried because it is simple English, just like you always hear in the radio, when the Mrs Musonda tells you what to do. OK ? Here the first question:

Question Stem	Selection	Instructions
11. What colour is this?	red, white, blue, green, black, brown, yellow, and orange	<i>Present all colours in any order.</i>
12. What is this?/What is _____ wearing?	dress; hat; shoes; socks; shirt	<i>Allow a second chance if necessary</i>
13. What time of the day do you get up/go to bed	morning; evening; night, or any specific time	<i>Allow a second chance if necessary</i>
14. What can you see in this picture? What are they doing?		<i>Present the picture on the learning center scene</i>
15. Can you see _____? Is _____?		<i>Ask several questions about the picture to elicit "yes" or "no" responses.</i>
16. How many children can you see? women? radios?		<i>Use language associated with counting.</i>
17. Which animal do you like/do you not like?	animal, food, friends, colour	<i>Ask both the "like" and "do not like" questions about any of the items</i>
18. Where is the book?	Under, in, on top of, here, there, on, in front of,	<i>Present question involving prepositions or adverbs of place</i>
19. Here is one stick, and here are two _____.	book; hand; pen; leg	<i>Present two words involving plurals. Allow a second chance if necessary.</i>
20. Read these letters	A - Z; a - z	<i>Present any 5 letters of alphabet randomly</i>
21. Read this word What are these letters?	box; man; boy; pen; pot; dog; cat; table; shoe; hand; pen; car, leg; door; pot; spoon	<i>Present two words and ask them to read. If not, ask them which letters make up the word</i>
22. Spell _____	man; boy; pen; pot; dog; cat; pen; car, leg; door; pot; spoon, red	<i>Present two of these. Allow a second chance at reading if necessary.</i>

Appendix I: Test Administration Training Notes

Numeracy Items (1 - 10)

The numeracy items may be presented in English, or the learners' local language, just as it has been done in the teaching of these skills. Proficiency in English language should not be allowed to inhibit performance of the task at hand. Each of the items is described below.

Question 1

In this item, we want to test the learner's counting skill. In order to increase the chances of beginning the sequences where indicated, tell the learner to repeat the number range. But, if the child starts at one still and covers the sequence that you have presented, give full credit for this item.

Question 2

This item is meant to solicit information on whether the students can write a two digit numeral correctly. Some learners will reverse the numerals, for example, writing 15 instead of 51. In that case, ask the learner to write 15. Then ask her/him again to write 51. If he/she still reverses the numerals at this point, score the reversed item as an incorrect.

Question 3

This is a counting item, which also exhibits basic multiplication skill. Present the item using the language that is understandable to the learners. You can ask them to count in twos, or ask them to count "2 by 2". Present the first 2 number of the sequence, and let them supply you with the remaining three number of the sequence.

Question 4

This is another counting item that exhibits basic multiplication skill. Present the item using the language that is understandable to the learners. You can ask them to count in tens, or ask them to count "10 by 10". Present the first 3 number of the sequence, and let them supply y the remaining seven.

Question 5

This item test their knowledge of number facts, and also, basic reasoning using numbers. Present two items from the set, each item being presented horizontally. Ask the student to read the number sentence, and then solve it. While some learners will add abstractly, those who need to perform this task concretely should be allowed to do so.

Question 6

This item tests addition of single digit, which yields answers is in double digits. Present two items from the set, each item being presented horizontally. Ask the student to read the number sentence, and then solve it. Some learners will add abstractly, while others will perform the task using concrete objects. This is acceptable. If it is not quite clear to you whether the learner has mastered addition, present a third item.

Question 7

The item tests subtraction of one single digit number form the other, with answers in single digits. Present two items from the set, each item being presented horizontally. Ask the student to read the number sentence, and then solve it. Some learners will subtract one number from the other abstractly, while others will perform the task concretely. This is acceptable. Present a third item if you need to convince yourself whether learner has mastered addition.

Question 8

The item tests application of subtraction in a commercial setting. The item should be presented in a number story involving denominations of 100. Present two items from the set. Most learners will perform the subtraction problem abstractly, while others will perform the task concretely. This is acceptable. Again, you may present a third item if you need to convince yourself of mastery..

Question 9

The item tests simple recall of names of shapes. All four shapes should be presented in any order. Please do not interpret the names of the shapes.

Question 10

The item tests a first level operation with properties of the four shapes. Conceal the shapes that you used for the previous item, and ask the learner to draw the shapes as you call them out. Precision in drawing is not important. However, the children need to clearly differentiate a square from a rectangle. Please do not interpret the names of the shapes.

Literacy Items (11 - 22)

All literacy items are to be presented in English, without any translation. Functional literacy at a very basic level of the English language is expected.

Question 11

The item tests recall of names of colors. All the 8 colors in the list should be presented.

Question 12

The item tests understanding of language and use of language to recall and name items of clothing. Present an opportunity to name at least two items, and also be sure that the learner understands what you were asking.

Question 13

The item tests understanding of language and use of language in a conversation about different time periods in a day. Present another opportunity if you need to be ascertain whether or not the learner understands what you were asking.

Question 14

The item tests understanding of language and whether learners can use the language to describe what they see in pictures. Use the picture from the Taonga Market scene. Present several questions so as to have a good indication of the level of mastery (none, partial, or full mastery).

Question 15

The item tests understanding of language and use of language to confirm or deny certain facts. Using the picture from the Taonga Market scene, present several questions so as to have a good indication of the level of mastery (none, partial, or full mastery).

Question 16

The item tests understanding of language and use of language associated with counting. Using the picture from the Taonga Market scene, ask several questions that would require the to count objects in context.

Question 17

The item tests understanding of language and its use to express personal meaning using reference to the first person, and possessive pronouns. Present several questions so as to have a good indication of the level of mastery (none, partial, or full mastery).

Question 18

The item tests understanding of language and use prepositions and adverbs of position or place. Present several questions so as to have a good indication of the level of mastery (none, partial, or full mastery).

Question 19

The item tests turning singular words into plurals. Present several words from the list so as to have a good indication of the level of mastery (none, partial, or full mastery).

Question 20

The item tests recognition of letters of the alphabet. Present the letters at random first, and then consecutively if the learner is not able to recognize them at random. Present several strings, so as to have a good indication of the level of mastery (none, partial, or full mastery).

Question 21

The item tests reading of words with single syllables. Present several so as to have a good indication of the level of mastery (none, partial, or full mastery).

Question 22

The item tests spelling of words with single syllables. Present several so as to have a good indication of the level of mastery (none, partial, or full mastery).

Appendix J: Guidelines for Test Administrators

1. Yes	2. No	
Q206. How many broadcasts have you missed in the period between January to July 2003, due to your radio not working well?		
1. None	2. One to three	3. Four to eight
4. Ten or more		

SECTION C – ATTENDANCE AND ACHIEVEMENT

Q301. How many children have dropped out of the Grade since January, 2003?	1. None	2. One to three	3. Four to eight	4. Ten or more	
Q302. What is the most common reason for the dropping out of school?	1. Most of those who dropped out had to go to work				
	2. Most of those who dropped out had transferred to a regular school.				
Q303. How much do you think the children are learning from the radio program?	1. Very little, far less than those in a government school				
	2. They learn a lot, but not as much as those that are in a government school				
	3. They learn a lot, just as much as those that are in a government school				
	4. They learn a lot, more than those that are in a government school				
Q304. How many of the children in Grade 3 can read and write in their local language?	1. About 20%	2. About 40%	3. About 60%	4. About 80%	5. Close to 100%
Q305. What do parents say, about their children’s learning?	1. Parents say that children learn very little, far less than those in a government school				
	2. Parents say that children learn a lot, but not as much as those that are in a government school				
	3. Parents say that children learn a lot, just as much as those that are in a government school				
	4. Parents say that children learn a lot, more than those that are in a government school				

SECTION D – COMMUNITY PARTICIPATION

Q401. Do community members assist in the running of the centre?	1. No, they do not assist at all.				
	2. Yes, they do assist, but only a few times, after they have been asked				
	3. Yes, they participate satisfactorily				
	4. Yes, they participate a lot, and are very useful				
Q402. Do you think your centre is successful?	1. Not at all				
	2. Yes, but only mildly successful. It needs a lot of improvement				
	3. Yes, it is performing adequately. It needs some improvement				
	4. Yes, it is extremely successful				
Q403. What will happen to the children if the centre closed down?	1. They will transfer to local school				
	2. Most of them would go to live with a relative in another town so they can attend school				

3. It would be the end of their education, unless government builds a school in the community	
Q404. Would you recommend the IRI program to any of your relatives? 1. No 2. Yes, if there was no government or community school to attend 3. Yes, even if there is government or community school	_____
Q405. Would you recommend your centre to any of your relatives? 1. No 2. Yes, if there was no government or community school to attend 3. Yes, even if there is government or community school	_____

E. What has been the major success of the Taonga IRI programme in your community?

F. What has been the major weakness of the Taonga IRI programme in your community?

G. What is the greatest threat to the IRI program your community?

Appendix L: Focus Group Questions (for Community Members)

Question 1: How did you receive information about the interactive radio instruction

Program?

Question 2 a: What prompted you to open a learning centre?

Question 2 b: What preparations did the community make for IRI?

Question 3: How soon are you hoping to have a government school in your community, now that the government has declared free education?

Question 4 How active have you been in IRI activities?

Question 5: What personal support are you giving to the mentor?

Question 6a: What are your major expectations about the IRI program?

Question 6 b: What has been its major success?

Question 7: What is the greatest threat to the IRI program in this community?