Zambia Quality Education Services Through Technology (QUESTT) Project

Impact of Interactive Radio Instruction
Grade 1

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Republic of Zambia – Ministry of Education
Education Broadcasting Services

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

December 2001

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EXECUTIVE SUMMARY

A mid-pilot evaluation was conducted in October 2000 after the first 50 programs of Grade 1 level Interactive Radio Instruction (IRI) programs. That evaluation addressed the questions of whether students were attending and remaining in the program, and how much they were learning. The present evaluation was conducted in August 2001 after all 100 programs had been broadcast to a national audience attending radio-learning centers in every province. It addresses the same fundamental questions as those asked in the evaluation of the pilot, but contains more information about the out-of-school audience. Data for this evaluation was collected from a sample group of 30 learning centers receiving the radio broadcasts daily over a 20-week period. The data provides insights into enrollment, daily attendance, learner characteristics, and student mastery of basic numeracy and literacy skills using a curriculum based achievement test.

The 2001 evaluation demonstrates the persistent demand for IRI. EBS recorded a total of 251 organized learning centers in all nine provinces. The number of reported learners enrolled is significant (approximately 9,250). Numerous "spontaneous" IRI centers organized by a variety of people have also been reported. The composition of learners has become increasingly varied as new student groups from the early childhood and adult populations are becoming involved in IRI, signaling a growing interest in the program. The percentage of orphans reportedly enrolled at centers has increased from 27.7 to 33.2 percent since the 2000 pilot, while enrolment by sex is estimated as equal with slight variance in the urban enrollment reflecting 51.2% female and the rural enrollment reflecting 51.4% male.

Students are learning with IRI. Results of the Grade 1 level achievement test in basic numeracy and literacy indicated that students demonstrated more mastery in numeracy skills (71.5% mean score) than literacy skills (56.6% mean score). On the whole, student performance increased by age with learners aged 18 years and over scoring 99 to 100 percent on numeracy test items. Variance in performances by gender was virtually nonexistent. Also, there was no significant difference in the performance of urban versus rural centers (while more urban centers performed above the mean, two of the best performing centers were in rural areas).

The evaluation revealed, however, that the programme is facing a number of challenges. The following recommendations have been suggested: 1) due to the fact that the program is attracting a wider range of clientele than was originally intended, the Ministry of Education (MOE) should articulate a simple 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; 2) mentors should be encouraged to keep attendance information and a journal documenting critical incidents; 3) in order to provide consistent descriptions of learning achievement and for year to year comparisons, the Educational Broadcasting Services (EBS) should consider a standard

setting exercise; 4) to improve mentor retention, MOE should delineate the profile of an ideal mentor for the IRI program, his/her training needs, including coaching during monitoring visits, as well as in-service training where possible; 5) MOE should continue to seek partners in the development and delivery of IRI as well as to explore options for mentor incentives such as preferential admission to teacher training because the support of mentors and centers is critical and 6) due to the rapid expansion, there is a need for EBS to improve data management and to move from the current method of entering data on a spread sheet to developing a database of center, student and mentor profiles in order to improve efficiency and allow greater manipulation of data and easier linkage to the MOE's Planning Unit.

The test results attest to the effectiveness of IRI in providing sustainable, accessible, quality basic education for out of school children and adults. The strong demand for IRI is apparent in the proliferation of spontaneous centers established for a wide range of target and non-target learning groups. The Grade 1 test served its purpose as a valuable monitoring and evaluation tool to identify skill areas where learning is taking place and highlighted the need for exploring sustainable ways of supporting centers and suitable assessment procedures to more accurately ascertain content-specific, individualized student performance evaluations.

1.0 BACKGROUND

The present IRI project in Zambia is founded on a mandate to provide an alternative delivery system for the existing curriculum. The IRI Zambia project team began its formal work in 1999 by training scriptwriters, developing an IRI masterplan for the Grade 1 curriculum, writing lessons and producing radio programs, as well as recruiting and training mentors who would run the learning centers. These initial activities were followed up by an official launch of the program in July 2000 when Grade 1 programs went on air for pilot testing. Twenty-two centers participated in the pilot, two in Monze, eight in Chongwe, and the rest in Lusaka.

Several evaluation activities were undertaken as part of the pilot-testing phase. These included formative evaluation of programs, where writers took turns to test their programs at a learning center established at EBS for this purpose, collecting baseline data on how much knowledge the children had as they began the IRI program as well as an appraisal of their attendance and how well they had learnt after 50 programs. A summative evaluation was also conducted at the end of the pilot phase.

IRI programs for Grade 1 went on air nationwide in March 2001. A total of 35 districts (out of a total of 72) in all nine provinces reported the existence of 251 learning centers. 169 centers sent detailed information on the learners as indicated in the table below.

Table 1: Number of Grade One Centers in 2001 by Province and District

Province	*No. of Districts with IRI*	*No. of centers recorded*	*No. of centers data received*
Central	5	32	17
Copperbelt	6	30	21
Eastern	7	22	21
Luapula	1	5	5
Lusaka	4	61	48
Northern	4	22	11
Northwestern	3	37	8
Southern	4	33	29
Western	1	9	9
TOTAL	**35**	**251**	**169**

The total number of learners that are enrolled at IRI centers is reported to be 9,250. Some centers, however, only reported the total number of students but did not provide the student profile data. Student profiles were received from only 169 out of the 251 centers. The total number of learners for whom more complete data was received was 7,782 as reflected in the Table 2 below.

Table 2: Number of Grade One Students Enrolled in 2001

Province	*Female*	*Male*	*Total*
Central	465	553	1018
Copperbelt	445	485	930
Eastern	426	400	826
Luapula	117	134	251
Lusaka	1257	1252	2509*[1]
Northern	306	365	671
Northwestern	186	178	364*[2]
Southern	486	503	989
Western	100	124	224
TOTAL	**3788**	**3994**	**7782**

IRI programs for Grade 1 (a total of 100 programs) were broadcast twice a day on weekdays, running for 20 weeks, and ending in August 2001. At the end of the broadcasts a sample of 30 learning centers was selected for a monitoring and evaluation study.

1.1. Purpose of the Evaluation

The purpose of this exercise was to monitor whether learners continued to attend at the learning centers for their daily broadcasts, and if those that were enrolled in the IRI programs achieved basic numeracy and functional literacy in English as (stipulated in the Zambian curriculum). Also investigated was whether the programs were benefiting the population for whom they were intended, out-of-school children experiencing socio-economic hardships. To that end, the evaluation focused on the following questions:

1. Is there a demand for IRI programs (i.e., are learning centers established and learners enrolled in them)?
2. Do learners attend daily broadcasts at the learning centers?
3. What are the characteristics of the children who attend?
4. Are learners achieving basic literacy and numeracy as expected at the Grade 1 level?
5. What is the impression of the beneficiaries, individuals associated with IRI such as mentors, and the general public on the effectiveness of IRI as a means of imparting basic literacy and numeracy skills?

Data on enrollment and background characteristics of the learners was collected at the selected centers, while attendance data was collected in a smaller number of centers. In

[1] 2,509 indicates the actual number of students for whom detailed information was received. A total of 3,958 students was reported for Lusaka. However, some reporters provided information (of 1, 449 students) as total numbers and did not send in the student profiles.

[2] As with Lusaka, the number of students for whom detailed information was received is 364 but the actual number of students reported was 383.

addition to this, learners were tested on mastery of basic numeracy and English language skills using a curriculum-based achievement test. Since programs are delivered through the medium of radio, some adjustments were made to the existing curriculum to make it suitable for radio.[3] These differences were accommodated in the achievement test that was developed. The sections below present a detailed discussion of the methodology, followed by findings resulting from the evaluation study.

2.0 METHODOLOGY

2.1 Sample

The population of IRI learners for which data was received was 7 782 learners attending 169 centers. This population was sampled in two stages, by center and by learner. 30 centers were sampled, 14 of which were located in urban areas and 16 in rural communities. The total number of learners in the 30 centers was 1898, which amounted to more than 24 per cent of the sample. The sample of 1898 learners was used 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).

While an attempt was made to obtain data on learner characteristics from all learners at each of the 30 selected centers, only 20 percent of the learners were randomly selected for achievement testing at each center, yielding a total of 405 examinees. 53.3 percent of the examinees attended urban centers, while 46.7 were in rural centers.

2.2 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 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. A mastery test was developed for the assessment. The test development process entailed 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.

2.2.1 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 (ECZ) 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

[3] The most significant adjustment has been the use of English as a medium of instruction for numeracy skills, and sequencing of the curriculum.

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 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).

2.2.2. 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 taxonomy[4]. Even though there application of 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.

2.2.3. Test Planning

One test plan of literacy and numeracy knowledge and skills was developed. Again, 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

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

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 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.

2.2.4. 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 Officer, 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 3 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).

Table 3: 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.

2.3 Data Collection

2.3.1 Training of Test Administrators

Training of test administrators started with a small team of three individuals from ECZ (who were trained by the testing specialist in preparation for trial testing on a convenience sample of 2 centers in Lusaka). The team was briefed on the purpose of test, how the test was developed, how the test was to be administered, and features that were to be trial tested. The training session was also used as an opportunity to receive feedback on the reasonableness and appropriateness of the test for testing Grade 1 literacy and numeracy skills. After trial testing, a debriefing session was convened at which additional feedback on how the test functioned and the interactions between learners, test administrators, and the test were noted for interpretation, and to improve the test. Upon finalizing the test, training notes were prepared for another ECZ Senior Research Officer (see Appendix H), who was responsible for training the live administrators.

The ECZ trainer trained six people to administer the tests. The District In-service Provider from Monze administered them in Monze; the former DEO from Chongwe administered them in Chongwe; a Peace Corps Volunteer administered them in Petauke in Eastern Province; and ECZ and EBS staff administered them in Lusaka. The philosophy behind this testing exercise was for administrators to ensure that learners understood the tasks clearly, hence the instructions in most questions, to give children

two chances to respond, and more chances if the test administrators was not show hoe to code the response. The sentiments of this philosophy are captured in the comments of one test administrator:

> *We gave the students ample time to think, we gave them examples, we even gave them hints and contextual clues and non-verbal cues. We didn't aim, in other words, to stump them. The benefit of the doubt lay with pupils*.
> Testing Report for the Eastern Province, Hunter Nielsen,

Tests were administered in early August during the last week of broadcasting. A convenient sample of 405 Grade 1 learners were selected from the sample o 30 centers. There were14 centers in Lusaka urban, 7 centers in Chongwe (Lusaka rural), 4 in Petauke (Eastern Province) and 5 in Monze (Southern Province).

2.3.2 Test Administration

Of the 14 centers tested in Lusaka urban, five were part of the September, 2000 pilot sample. However, in August 2001, test administrators tested no more than five children that had been part of the pilot sample. All but three centers are part of the original pilot centers. Some new ones selected for testing had to be abandoned for logistical reasons, or after administrators failed to locate them (many new centers have not been visited by EBS or the MoE since the this year's cohort of mentors were trained in February). 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.

2.3.3 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.

3.0 FINDINGS

3.1 Demand for IRI

3.1.1 New Centers

EBS receives information on the new learning centers that open, as well as the number of learners who are enrolled at each center. Approximately 251 IRI learning centers opened up in the nine provinces when the program went to scale in March, 2001. 169 of these sent information to EBS indicating an enrolment of approximately 9,250 learners who received Grade 1 programs. 9,250 learners may seem to be a small number in comparison to the total number of Zambian children of school going age who are out of school (an estimated 700,000 in 2000[5]). However, the fact that a significant number of children are taking advantage of this opportunity to engage in organized learning constitutes clear evidence that IRI programs are in demand.

People are showing the value they place on the programs in various ways. In Petauke (Eastern province) for example, communities are so determined to ensure the success of the program that they have decided to cultivate their mentors' fields as their way of supporting the program. Near Lundazi (Eastern province), an individual who had no access to a radio would go to a neighbor where people congregated to listen to the radio program. He listened, took notes then went back to his organized learning group to teach what he learnt.

In Chongwe (Lusaka rural) one community decided they wanted the program to stay after watching its success during the pilot and put extra effort to complete a shelter for the radio learners that had stalled for a long time. A similar story comes from Chipata

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

(Eastern province), where the coming of the radio program provided one community with the incentive they needed to realize a dream they had had for several years: they built a school that can accommodate at least two classes where there was nothing but a tree before! In Garden and Linda compounds of Lusaka, mentors have been offered plots to build classrooms for their centers. The current Garden center is under a tree within the grounds of Ngwelele school while the center in Linda is in the mentor's home. In Jack compound, the community has shown their support of the program by building a toilet for the children next to the church where the children meet to listen to the radio program. In Central province, despite not having been trained or received the mentor's guides for some time, several communities went ahead and a total of 32 centers.

3.1.2 New Audiences

The emergence of IRI is having an effect on mobility between centers and schools in some places. In Monze District, the usually large numbers of children enrolling and waiting to enroll in Grade 1 did not occur in 2001. It is believed that a significant number of them took advantage of the opportunity provided by the radio programs and enrolled in Interactive Radio Learning Centers (IRLCs). However, in this survey, there was also evidence of the opposite movement in an urban center after the pilot phase.

> *"Most of the children transferred to regular schools and community schools. There were only two remaining from the previous enrollment."*
>
> Report of testing held at Garden Center by Teza Nakazwe, August, 2001

This kind of movement reflects a vision articulated by the MOE: that the various alternatives being introduced to ensure that all Zambian children have access to basic education will allow easy access between government schools, community schools and radio centers depending on the circumstances of the child.

But since the effect of and motivation for this mobility are not yet clear, it seems to be an important issue to investigate in the qualitative study proposed for 2002 in the EBS 5-year Strategic Plan. It may simply reflect confusion in the minds of parents and guardians about where the best "deal" lies, differences in the number of options available to them in rural and urban areas, or it may reflect a general heightening in the desire for parents and guardians to invest in the education of their children.

In addition, the program is attracting adult learners as can be witnessed from the establishment of centers which service adult learners in Monze, Southern province (Cheelo B), and in Chongwe, Lusaka rural (Chimbwete). In both cases, the mentors reported that the adults came to them and asked, *"What about us? We want to learn too."* So, in addition to an IRI class for young learners that had already been established, adult classes were born. Observations during monitoring visits indicate that the adults,

including mothers with babies, are just as eager to learn and participate even in activities intended for young learners. The findings of this study also indicate there is an increase in the number of learners who are still minors but are beyond the official age for lower primary (11- 17 year olds). This group constitutes 20.8 percent of those enrolled.

The IRI program seems to be filling yet another need: that of exposing children that are not yet of school-going age to organized learning. Reports received from centers indicate that there are younger children who attend with their older siblings who impact the program in various ways.

> *It is quite difficult for the mentor to control them. Children comprise families of 2-3. That is, the center has 2-3 children coming from one family. The youngest child can be about 3-4 years old.*
>
> Report of testing held at Ngombe Center by Teza Nakazwe, August, 2001

While it cannot be argued that younger children are demanding education, it is clear that it is important for the older siblings, who are most likely the caregivers, to attend the radio learning centers. Much as it would undesirable to have learners miss attending because of their care-giving responsibilities, having learners who should belong to early childhood programs in IRI programs might interfere with the process of learning, either in the form of older siblings having to attend to their younger brothers and sisters during the time of the broadcasts, or mentors trying to accommodate the needs of these younger learners. It may be necessary, therefore, to articulate a strategy for dealing with the issue of age limits, especially at the lower end.

3.2 Attendance

Attendance data were obtained from 10 centers in and around Lusaka, and 4 centers in Monze after Grade 1 broadcasts had ended. This involved a number of steps: requesting the mentor to provide the register, recording the highest number of children who enrolled in the center, recording the number enrolled at the end of Grade 1 (August 27, 2001). A total of 1284 learners were registered in the 14 centers at the beginning of the broadcasts, 1155 of whom were still attending lessons at the end of Grade 1 broadcasts as reflected in Table 4.

Table 4: Enrolment

Center	*No. enrolled in March, 2001*	*No. enrolled in August, 2001*
Garden	135	135
Kanyama	127	99
Mimosa (Linda)	64	71
ZACEF Kamanga	140	137

Jack	79	72
Misisi	120	120
Bauleni	87	90
George	120	92
Ng'ombe (ZACEF)[6]	80	70
Kamanga	166	122
Hanamaila	30	28
Cheelo A	43	33
Chipembele	41	38
Naluca	52	48
TOTAL	**1284**	**1155 (90.0)**

Less than 10 percent of the learners have dropped out, compared to about 20 percent in the piloting sample. This could be an indication that parents and other stakeholders were becoming more familiar with the programs and were taking them much more seriously after the national advertising campaigns that EBS embarked on. Learners typically drop out of the program when families move to a different part of town, or when children are relocated of children to rural areas for various reasons. Some learners have daily responsibilities that make it impossible for them to attend the lessons, typically going to the market to sell foodstuffs, or looking after younger siblings. Rather than drop out of the programs, some learners do attend with their younger siblings.

Attendance data reflecting the number of programs that each child attended out of the 100 Grade One programs was obtained for only 10 centers, a number we feel to be too small to allow meaningful conclusions to be drawn. Many mentors had either lost or misplaced the G1 registers, or had not been taking attendance on a daily basis, and this is a management issue that the Ministry and communities need to address. We do know that economic realities affect education quite profoundly in some provinces, such as Luapula where children migrate to the lake areas to fish between January and July, and where patterns of attendance are known, appropriate management decisions can be made. The radio centers could migrate with the children of Luapula, for example.

3.3 Profile of the Learners

Data collected on learner characteristics included sex, age, who the guardians of the learners are, and whether they are orphans. We also collected data on whether or not they had formal schooling prior to enrolling at the center, and whether they had siblings in the center (see Appendix C for data collection instrument). These data were collected from the sample of 30 centers, 14 of which were located in an urban area, and 16 in several rural communities. The unit of analysis was the individual learner, 1898 of which were sampled. Generalizations on the profile of the learners are being made

[6] *This center is supported by a local NGO (ZACEF) which means that mentor is paid (unlike most others). Test administrator found out that children had missed almost a whole month of broadcasts in July when mentor went for voter registration activities. ZACEF appointed another mentor who abandoned the center after a few lessons.*

from the sample data to the population. Also, further investigations on learning patterns as a function of some of these variables will be investigated.

3.3.1 Sex and age of learners

Of the learners enrolled at the learning centers that were sampled, males are estimated to be 50.0 percent, the same as females. The implication of this finding is that even if the population may not replicate this breakdown in sex, no significant differences can be expected in the population parameters. The urban enrolment reflected slightly more females than males (51.2 percent compared to 48.8 percent), while the rural enrolment was the reverse (48.6 percent female, and 51.4 percent males).

The mean age of the learners was 9.7 years, whereas the median age was 7 years old (22.2 percent of the learners). The wide age difference between the mean and the median is explained by the fact that there is a wide variation between the youngest learners (5 years old), and the oldest (51 years old). There were no differences when age was disaggregated by sex. With the mean age in urban areas being 8.9, compared to 10.6 in the rural areas, however, a significant[7] difference was observed when age was disaggregated by locality.

With the introduction of IRI on a nationwide scale, a wider variation on the age of the learners was expected. Compared to the 2000 pilot sample, 21.1 percent of the learners in the 2001 were still minors (11- 17 year olds), even though they were beyond the official age for lower primary. Some centers, typically rural centers, had more than 20 percent of their learners being 13 years or older. For instance, at rural a center in Chimbwete (Chongwe, Lusaka), the mean age was 12.8 years, with 21.2 percent of those enrolled being adults whose ages ranged from 18 years to 49 years. In Monze district there was a center for adult learners, Cheelo Adult, which had learners of ages ranging from 17 to 51 years, with the mean age being 30.0 years old.

3.3.2 Parents and Guardians

1881 of the 1898 learners reported on this information. In that number, 66.8 percent of the children had both their parents living, while 33.2 percent were orphans as indicated in Table 2. Double orphans constitute 10.8 percent, while 22.5 percent learners had only one living parent. Compared to the pilot sample, the percentage of orphans is up from 27.7 in 2000 to 33.2 percent. However, we believe orphans may be under-reported in the present investigation as they were in the previous evaluation. This derives from the fact that the official definition for orphans may not be consistent with the cultural definition, where children cease to be orphans by virtue of the fact that they have been adopted into the family of a close relative, albeit unofficially. Mentors have confirmed before, from 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.

[7] $t = 7.60$, $p = .00$

Table 5: Distribution of orphans vs. non-orphans by locality

Living Parents	All learners (%)	Urban areas (%)	Rural areas (%)
Both parents alive	1256 (66.8)	679 (67.2)	577 (66.2)
Only mother alive	321 (17.1)	189 (18.7)	132 (15.2)
Only father alive	101 (5.4)	40 (4.0)	61 (7.0)
No living parent	203 (10.8)	102 (10.1)	101 (11.6)
Orphans	**625 (33.2)**	**331 (32.8)**	**294 (33.8)**

Table 5 indicates also that there are slightly more orphans in the rural areas (33.8 percent) compared to urban areas (32.7 percent). This pattern is a reversal from the pilot data (2000) where there were more orphans in the urban areas that in the rural areas. It was also expected that there would be comparatively more orphans in the urban areas, particularly in the case of HIV/AIDS orphans, because urban centers in Zambia have a higher prevalence of HIV/AIDS and HIV-related deaths. There is evidence that increasingly, orphaned children are ending up with grandparents or other relatives in the rural areas. The tracking of orphaned children and the reasons they are increasing in the rural areas is important and should be considered in the proposed 2002 study to measure the impact of IRI.

The information in Table 6 indicates who the guardians of the learners are. About 48 percent of the learners lived with both their parents. A significant number of learners (21.3 percent) lived either with their grandparents or other relatives. Guardianship may also shed more light on the issue of who the orphans are, especially in the case where the primary guardians are grandparents who are also acting as adoptive parents. In cases where children were double orphans, the grandparents were the most popular choice among the relatives (11.3 percent).

Table 6: Guardians of the learners by locality

Relationship to learners	All learners (%)	Urban areas (%)	Rural Areas (%)
Both parents	866 (47.4)	485 (48.0)	381 (46.7)
Mother	362 (19.8)	252 (25.0)	110 (13.5)
Grandparent(s)	206 (11.3)	70 (6.9)	136 (16.7)
Father	152 (8.3)	75 (7.4)	77 (9.4)
Other relatives	183 (9.6)	120 (12.0)	63 (7.7)
Non-relatives	57 (3.1)	8 (0.8)	49 (6.0)
Total	**1826 (100.0)**	**1010 (100.0)**	**816 (100.0)**

There were significant differences in guardianship in the urban and rural areas. Many more children lived with either or both their birth parents in the urban areas than in the rural areas (80.3 percent, and 69.6 percent, respectively). The reverse was true for

grandparents who lived with their grandchildren (16.7 percent in rural areas, and only 6.9 percent in urban areas). The reason for this may partly be that grandparents typically live in the rural areas. Also, for every child in the urban areas that is left in the guardianship of total strangers, there were 7 such children in the rural areas.

Where both parents were alive, 90.5 percent of the learners lived with either or both parents. When single parent were separated and considered on their own, 70.4 percent of single mothers lived with their children, compared to only 41.9 percent single fathers. A significant number of children with single father parents, 22.6 percent, had their grandparents as primary guardians. From a psychosocial point of view, it is highly desirable that parents should take primary for responsibility for guardianship of their children. Parental guardianship is also known to have positive benefits in children's school performance. However, there could be cultural and economic factors that make it equally acceptable that children remain under the guardianship of their grandparents.

3.3.3 Prior school attendance

17.3 percent of the learners had some schooling experience prior to enrolling in the learning centers, and the percentages are similar for female and male learners. Unlike in the previous evaluation, prior school attendance is higher in rural areas (21.9 percent) than urban areas (13.7 percent). A possible explanation for this may be that when people move to the rural areas they lose opportunities to continue with their education. This finding partly explains why the rural communities have been more proactive in setting up centers for the IRI program).

3.4 Performance in basic literacy and numeracy

Grade 1 learners attained a mean score 27.9 out of 44 possible points on the whole test (a composite score of the numeracy and language score) , a mean of 63.4 percent. The lowest score was 0, and the highest, 44. The mean score for the numeracy component was 14.3 out of 20 (71.5 percent), while the mean for the language component was 13.6 out of 24 possible points (56.6 percent). There were no differences when the scores were disaggregated by sex.

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

Content	N	Minimum	Maximum	Mean	Std. Dev.
Math	405	.00	20.00	14.3	4.9
English	405	.00	24.00	13.6	5.5
Composite	405	.00	44.00	27.9	9.7

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. While it is true that learners were generally weaker in English language skills, part of the reason for low performance on English language items could be that some of the questions were not presented clearly enough for student to comprehend the

task. These are tasks that do not lend themselves to paper-and pencil testing, and are easily observed in situations where learners respond naturally to situations that arise in the learning environment. 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).

In the literacy component, learners had the highest competence in recalling names of colors and items of clothing (at 77.5 percent). The least performance was registered in the skill area of production of language, where the mean for the domain was 46.7 percent. In particular, most learners were not able to produce language that expresses personal preference (Item 17, with only 17.5 percent masters, and less than 50 percent combining masters and partial masters). Most test administrators expressed that they had difficulties in presenting the task to students on this particular item.

Learners also had difficulties in reading sight words (Item 21 with 18.5 percent mastery) and spelling (Item 22, at 22.5 percent mastery). Even though items on reading and spelling were included in the test, reading is not a terminal skill at Grade 1, hence it was expected that most learners would have difficulties with reading. Also in the case of IRI instruction, learners have very little opportunity to practice this skill in that they do not have reading material at their disposal, They generally only read words written on the board by the mentors, hence the low performance on this skill. It is a matter of considerable importance in the design of the IRI program how far we can continue with this method. For now, information on reading is useful in that gains in Grade 2 will be measured against the present reading level.

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

Skill Area	Items	Non-Masters	Partial Masters	Masters	Domain Mean
Production of language	Item 16	18.3	16.5	65.2	
	Item 17	56.0	26.4	17.5	
	Item 18	40.7	25.4	33.8	5.6 of 12
	Item 20	26.7	34.1	39.3	(46.7 percent)
	Item 21	47.7	33.8	18.5	
	Item 22	50.4	27.2	22.5	
Comprehension of language	Item 13	28.0	18.3	53.7	
	Item 14	21.5	36.8	41.7	5.0 of 8
	Item 15	21.2	16.5	65.2	(62.5 percent)
	Item 19	35.3	23.0	41.7	
Recall of names	Item 11	10.4	25.2	64.4	3.1 of 4
	Item 12	16.0	17.8	66.2	(77.5 percent)
Counting and writing numbers	Item 01	5.7	13.8	80.5	
	Item 02	18.8	16.5	64.7	5.9 of 8
	Item 03	21.2	24.9	53.8	(73.8 percent)
	Item 04	23.7	16.3	60.0	
Shapes	Item 09	15.1	36.8	48.1	2.7 of 4
	Item 10	14.6	30.9	54.6	(67.5 percent)
Number operation	Item 05	24.0	27.7	48.4	
	Item 06	22.2	13.8	64.0	5.7 of 8

	Item 07	19.8	14.8	65.4	(71.3 percent)
	Item 08	19.8	4.0	76.3	

All skill areas of the numeracy component were performed at a mastery level of over 50 percent as indicated by the domain means. Given a range of between 10 and 99, more than 80 percent of the learners were able to count in 1s (Item 1). A significant number was able to write the two digit numbers in the same range (Item 2). Counting in 10s was a little easier than counting in twos for most learners (Items 4 and 3, respectively). On the whole, learners performed very well on numeracy, but only reasonably well on literacy. Performance differences by sex were negligible, a known strength of IRI programs worldwide that has been borne out for two consecutive years in Zambia.

3.4.1 Comparison with the previous Grade 1 tests

Table 9 below includes the domain description for the Grade 1 test in 2000. As can be expected in a test of basic literacy and numeracy at the lowest level, the internal structure of tests (See Table 3 on Section 2.2.4 for Grade 1, 2001 test) is the same. The test domain in both instances covers recalling of numbers names, counting, simple comprehension and production of language, and writing of letters and single digits. These are presented in similar proportions in both tests. Test results show a similarity between the patterns of the current test scores and both sittings of the previous test scores. This feature speaks to the internal consistency of the test, which in this case is very high.

Table 9: Skill areas and corresponding test items for Grade 1 Test, 2000

Skill Area	Intended Learning Target	Test Items
Language	1. Simple comprehension of language	11, 14, 15, 16, 18, 20
	2. Production of language[8]	1, 2, 12, 13, 19
	3. Writing letters	17
	3. Recalling names	7,
Numeracy	1. Counting	3, 4,5
	2. Writing numbers	6
	3. Recalling numbers	10
	4. Adding and subtracting	8, 9

Table 10 below includes, for comparison, performance scores for the current test administered after 100 programs, and those of the previous cycle of testing, administered midway into the broadcasts in the form of a pretest in July, 2000, and a posttest using the same test instrument in October, 2000.

Table 10: Test Means for Literacy, Numeracy and the Overall Test

[8] All items under this learning target are subsumed under comprehension of language.

Test Performance, August 2001					
Content	N	Minimum	Maximum	Mean	Std.Dev.
Math	405	.00	20.00	14.3	4.9
English	405	.00	24.00	13.6	5.5
Composite	405	00	44.00	27.9	9.7
Test Performance, October 2000					
Content	N	Minimum	Maximum	Mean	Std.Dev.
Math	143	5.00	14.00	12.6	1.8
English	143	6.00	26.00	19.8	4.8
Composite	143	11.00	40.00	32.3	6.2
Test Performance, July 2000					
Content	N	Minimum	Maximum	Mean	Std.Dev.
Math	190	.00	14.00	10.2	3.0
English	190	.00	26.00	14.2	5.8
Composite	190	4.00	40.00	24.4	7.8

Even though the scores show internal consistency, performance on the previous tests was far superior to performance on the current test. This is partly due to the fact that there were a lot more centers to deal with in the nation-wide Grade 1 broadcasts, which means that standardization of procedures, and supervision of the learning center was, at best, minimal. 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. 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 not qualified teachers.

3.4.2. Performance by locality and by center

Differences in performance both by locality and by center were detected and presented as qualitative data by administrators throughout the testing period. IRI staff has also noted these differences in their routine visits to the learning centers. At a general level, a conclusion can be made that urban centers were performing better that rural centers as shown in Figure 1, and was borne out by testing data. The overall mean for the composite test was 27.9 of 44.The mean for urban centers was 29.6, compared to 25.8 in the rural areas.

Figure 1: Centers, by locality and name, performing above and below the mean

Urban Centers Above the Mean		**Rural Centers Above the Mean**
1. Bauleni	7. Mapepe	1. Cheelo Adult
2. Chainda	8. Misisi	2. Chimbwete
3. Chipata		3. Hanamaila
4. Garden		4. Nangombe

5. Kamanga 6. Kanyama	
Urban Centers Below the Mean	**Rural Centers Below the Mean**
1. George 2. Jack 3. Kabwata 4. Kamanga-ZACEF 5. Mimosa 6. Ngombe-ZACEF	1. Chanshaya 7. Kapovu 2. Chilando 8. Mwachilele 3. Chilyabwale 9. Mwanza 4. Chipembete 10. Naluca 5. Chipungu 11. Namakube 6. Kanakantapa 12. Nyangwena

Twelve centers[9], those in the first and second quadrants, performed above that mean. The top two centers were Nang'ombe in Chongwe, and Cheelo Adult in Monze. The mean scores for the centers in this group ranged from 36.8 (83.6 percent) to 28.6. Even though there were differences in performance by locality, high performance and achievement was attributed less to the locality factor than center specific attributes and occurrences. For instance, for the best performing center, Nangombe Center, the test administrator had this to say about the center and the mentor:

> *I am very impressed with this Center because after the radio lesson the mentor takes his time to go over the lesson and the previous day's work. They spend up to one and a half hours in post broadcast activities….This mentor is very committed to his work. I hope the community is appreciating his work. The work at this Center is going on smoothly.*
>
> Report of testing held at Nangombe Center by F. Mubiana, August, 2001

Generally, centers in this part of Chongwe, where there are fewer government schools, were noted for high motivation and higher than average performance. A possible explanation could be that IRI centers are the only means of providing education to children for most communities, hence these programs are taken more seriously than in places where people have the community schools option to fall back on.

Cheelo Adult was reported to be a center that received a lot of support from the community and the area Catholic Church. High performance can be attributed to the involvement of the Ministry of Education In-service training provider, as well as the mentoring system that is in place.

> *Mrs. Lumang'ombe, the Monze DIP, works closely with Fr. Tadeusz, who has spearheaded the IRI effort in Chikuni area. They have a total of 19 centers. Mentors are chosen and supported by communities. With the help of the Choma DIP and headteacher from a nearby school, they visit and monitor mentors regularly. They also bring them to a central place (parish) for a monthly meeting. Halfway through Grade 1, they held a weeklong refresher training course for the mentors. Theirs is by far the best monitoring system developed so far and in many ways an ideal situation.*
>
> Notes from IRI Consultant about Monze centers, October, 2001

[9] p
learners in the center, whose data is aggregated as a group.

A peculiar feature of Cheelo B center is that it enrolls parents of children that attend at a neighboring center, hence high performance could also be attributed to the age of the learners, as will be discussed in the next section.

Eighteen centers performed below the mean. The least performing centers were Chilando and Mwanza, in the eastern Province, with overall means of 6.0 and 10.7, respectively. The sample sizes that were tested in these centers were too small for any meaningful statistical conclusions. However, feedback from the test administrator has shed considerable light on the difficulties in the learning environment, the setbacks in the mentoring process, and the childrens' interaction with testing situation and the test. In addition to there being no reliable radios that the communities can use, the mentors do not seem to have received adequate training:

> *…mentors only reinforce language with rote methodologies, parents cannot reinforce English in the home, students are too young often to understand, and radios are poor so that broadcasts are unclear… The mentors here could really benefit from some sort of training designed to make them more effective instructors within the Taonga framework.*
>
> Testing Report for the Eastern Province, Hunter Nielsen, August 2001

In fact, for factors that militated against good performance in the centers that he is working with, Mr. Nielsen cited features that were the strengths of the centers that performed well, such as Cheelo Adult and Nangombe. He also cited the age of children, an issue which will be dealt with in more detail in the next section.

3.4.3. Performance by age

The ages of learners in this sample ranged between 5 and 51 years old. However, with the mean age in urban areas being 8.9, compared to 10.6 in the rural areas, a significant[10] difference was observed when age was disaggregated by locality. Significant differences were also observed when the age categories were used to disaggregate performance as reflected in Table 8.

The first age category 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 category, that of 14 to 17 year olds were minors who would, under normal circumstances, be pursuing secondary education. The last age category was that of

[10] $t = 3.89$, $p = .00$

individuals who are officially adults.

Table 11: Performance by age category

Age Categories	Test	N	Minimum	Maximum	Mean	Std. Deviation
6 years and under	Numeracy	26	0	19.0	8.7	5.1
	Literacy	26	.0	18.0	11.1	5.2
	Composite	26	0	33.0	19.7	9.2
7 - 13 year olds	Numeracy	280	0	20.0	14.0	4.8
	Literacy	280	.0	24.0	13.4	5.8
	Composite	280	1.0	44.0	27.4	9.8
14 – 17 year olds	Numeracy	23	12	20	18.0	2.7
	Literacy	23	7.0	24.0	16.7	4.1
	Composite	23	20.0	44.0	34.7	5.8
18 years and older	Numeracy	13	18.0	20.0	19.4	.87
	Literacy	13	8.0	24.0	17.0	4.9
	Composite	13	28.0	44.0	36.4	5.2

The results showed an increase in performance as age increased, with all learners in the category of 18 year olds and older missing only one item, or getting a perfect score in the numeracy subtest. The mean differences were significant[11]. The standard deviations were also increasingly narrower, which means that with increasing age, learners were becoming more similarly 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.

[11] Composite: F = 14.3, p = 00; Numeracy: F = 23.5, p =.00; Literacy: F=5.8, p = .01, all at df = 341

3.5 Impression on Effectiveness of IRI

IRI is becoming an effective alternative way of providing basic education in Zambia. Unlike in 2000 when the evaluation study included focus groups of mentors, evidence on the effectiveness of IRI was mostly gathered by MOE, EBS and EDC personnel who were closely associated with the program and by various partners. Reports from mentors, partners supporting the programs (e.g. churches and PCVs), test administrators, etc. have confirmed that IRI is becoming an effective and workable community alternative in providing basic literacy and numeracy skills, and directing attitude learning towards some intended goals.

Other impressions were gathered from the high level of commitment to IRI work that has been exhibited by some of the mentors and communities as can be seen in the notes below which were provided by mentors in the Chikuni area during the mentor refresher course in July 2001, and the success stories in Appendix I.

> *The community has managed to buy two radios, two chalkboards and some pieces of chalk … the other problem is that the community has failed to give us support over the fact that thy are the ones who are looking after the orphans. Therefore they cannot manage to support us and support the orphans at the same time.*
>
> Chrispin Simulimya Keembe J. C
> Cheelo Centre (A and B), Monze

> *We have 38 pupils. The headmaster provides us with chalk. We are using a church as a classroom. The committee is busy working for this school so that it does not stop.*
>
> *We do not have a radio. For now we are using a radio with batteries. The committee is able to buy batteries for us. For now they are donating maize so that we buy a radio.*
>
> Mavis Mudenda,
> Kayola Centre, Monze

> *The community bought the radio, chalkboard and also some chalk. There are at least a good number of children who are performing very well, i.e about 25 of 41 children we have are able to read the words we taught them. For this reason many of the people are interested in Taonga more than the regular school … The center is facing a problem with the children who are orphans … some are staying with old people who cannot afford to support the children's need as well as the mentors'.*
>
> Mentors, Center Unknown
> Monze

We have a total number of 44 children. From the time we started up to date the attendance has been very encouraging. We have no problem with the children but on the side of the parents there is a bit of doubt because to them it is a new type of learning. But as time goes by we expect some changes …We still have a problem of purchasing the radio. We are still depending on a borrowed radio and we thank the person assisting us with a radio. Nevertheless parents have so far donated two bags and are still donating. Hopefully by the end of this month everything will be fine on the side of the radio. On the side of batteries we teachers are purchasing batteries for the benefit of the children

Mentors,
Kasilgili Taonga Market School

Our committee is trying by all means to help us mentors e.g organising even if we get nothing. Since we started we haven't been paid. The committee is encouraging us to work accordingly. There is a problem at our center. We've got children who cannot afford to attend the original school, which they only pay k4500.00 per year so that's why even paying for the radio is a problem they can't manage.

Mentors,
Namakube Centre, Monze

At Sintemba Center we have bought the radio. We made the wall blackboard, chalk, local material such as stones, sticks etc. The community were able to provide a learning place but the community is not able to assist the mentors in any way.

The condition of the radio is good because it is still working … The pupils are in three groups, the performance of the first group is very good ….

Webster Hamonze,

4.0 LESSONS AND RECOMMENDATIONS

4.1 Lessons

This evaluation, the second to be conducted on the IRI project since its inception two years ago, has revealed that IRI is fast becoming an invaluable feature of the Zambian education system. The preparation and hard work that everyone has put into the IRI project this year; preparing for nation-wide airing of the Grade 1 programs, developing and recording Grade 2 programs, visiting learning centers in Lusaka and rural/remote areas, as well as preparing for and collecting data for purposes of monitoring and evaluation, underscores the serious with which this mandate has been received and is being carried out. A few themes have recurred from the earlier evaluation.

1. The demand for IRI is still increasing. The program is also growing popular as can be gleaned from new groups of learners that are becoming interested in it.
2. It has been possible to achieve a lot with very little. Most centers survive with one radio each. In addition, several of the mentors who were in the piloting group have continued to help the children, mostly working for no pay, operating under very difficult conditions.
3. Mentor support and coaching as well as high levels of motivation seem to be making the difference between centers that record high learning gains and those that are not performing as well.
4. There is a benefit in continuing to actively seek churches, NGOs and other partners in the development and delivery of IRI in Zambia

4.2 Recommendations

4.2.1 Demand for IRI

The demand for IRI is increasing. Many new centers were organized nation-wide throughout the period of the airing of Grade 1 programs. Some communities started new centers, but managed to organize themselves well enough to receive lessons well into the period Grade 1 broadcasts. Many of these centers missed a number of broadcasts at the beginning of the Grade. In some areas parents and guardians are pulling children from existing schools and registering them for IRI instead. In this

regard, IRI is also presenting an alternative form of education, an alternative that makes sense to most parents in that the students in IRI will be able to go through two grades in the same year (Grades One to Four). Also, IRI is attracting a wider range of clientele than was originally intended, a feature that speaks for the demand of the program. An issue that arises from this demand is that some of the newly established centers may begin operating when they are too ill-prepared to undertake any meaningful learning.

> **Recommendation 1:** *MOE should 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(have a radio, recruit a mentor, have shelter, etc). This strategy should not be inhibiting to communities who wish to establish centers, though.*

4.2.2 Attendance

About 90 percent of the learners that enrolled at the beginning of Grade 1 completed the grade in centres where attendance information was available. The majority of learners attended regularly. However, attendance information was incomplete in most centers. It is clear that some mentors choose not to spend time on taking attendance, while others misplaced or lost the loose sheets on which they recorded attendance. It is possible that mentors perceive attendance taking to be a tedious, unnecessary and time consuming administrative duty.

> **Recommendation 2:** *MOE should articulate a mentor-friendly strategy for tracking daily attendance of learners. This strategy should include providing an official register that can be collected at the end of each grade.*

4.2.3 Learner characteristics

IRI attracts learners of various backgrounds. The majority of the children fit the definition of "out-of-school" children, while a few are being described by their parents as being out-of-school simply to be accepted at IRI centers. The sex breakdown of the learners is at the ratio of about 1:1. The age range has increased to include the very young and the very old, and this presents new challenges to the program. For most children, both parents are alive, which means they are attending IRI and not regular school due to hardships that their families may be experiencing, other than the fact that they do not have parents who can provide for them. Also, the majority of the learners live either with their parents, or grandparents, while only a few are in the care of non-relatives. It is anticipated that as the number of children who are drawn to learning centers increases, centers are going to be faced with situations where they are unable to admit every prospective learner.

> **Recommendation 3:** *A deliberate attempt should be made to delineate the profile of 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. While the programme was never intended for older learners, their participation*

yielded positive results. However, care should be taken not to mix groups of very old with younger learners as the older group is displaying a different kind of motivation and attitude allowing them to master concepts much faster, which could be a source of discouragement to younger learners. Also, monitors and supporters of the program should suggest some alternatives to mentors for the underage children who are showing up in the centers and are clearly not ready for formal schooling.

4.2.4 Student Learning

Learners exhibit more mastery in the area of numeracy than in literacy skills. Also, older learners are performing better than younger learners, their main strength being mastery of literacy skills. Students in the pilot centers achieved more than students in the centers nation-wide (80.1 percent on the composite test in 2000, compared to 63.4 this year), as was expected because the mentor training and supervision was more rigorous in the smaller number of centers. These differences need to be explained since, general statements on learning will cease to be meaningful as the number of examinees increases. A number of actions may need to be considered to maximize learning at the centers.

> **Recommendation 4:** *EBS should, with the help of ECZ and/or an educational assessment specialist, design a standard setting exercise that would determine cut-off scores for different levels of mastery (and/or proficiency) for purposes of providing consistent descriptions of learning achievement, as well as for year to year comparisons*.

As a result of the interactions that are taking place in the centers, learning is taking place in all centers, not only concept and skill learning, but attitudinal learning as well. However, learners at some centers are performing appreciably better than those at other centers. It has been suggested that some of the variance for performance at learning centers might be as a result of mentor characteristics, the assistance that mentors receive from their communities or from MOE, and mentor motivation.

> **Recommendation 5:** *A deliberate attempt should be made to delineate the profile of an ideal mentor for the IRI program, including his/her training and supervision needs (e.g. formal IRI training, coaching during monitoring visits, as well as in-service training where possible), and a mechanism to improve the chances that mentors are retained.*

4.2.5 Effectiveness of IRI

Evidence for the effectiveness of IRI can be gleaned partly from the fact that there are many learners who are transferring from regular schools to IRI centers as well as from the responses from communities and partners. Also, the program is becoming popular with the general public in Zambia. The evaluator enquired about the program randomly from a number of Zambian colleagues (in Botswana), some of whom were aware of the program and the need that it is attempting to address in the Zambian education system. However, systematic and comprehensive information about the

workings of an IRI center is needed for decision-making about many aspects of the program.

> **Recommendation 6:** *MOE should train mentors on how to keep a journal of critical incidents (aspects of the program that work well, and those that do not, as well certain occurrences that demonstrate that learning has taken place), to be used in monitoring, formative, and summative evaluations of the program.*

4.2.6 Cost

The cost of supporting IRI learning centers has grown tremendously with nation-wide implementation. Some of the more expensive activities have been the assessment and evaluation exercises that have been carried out. It is possible to cut down on cost by building into the program, data collection mechanisms such as the mentors' journals mentioned above, which data can then form the basis for the qualitative inputs into the evaluation study. Also, with an increasing amount of data that should be kept for monitoring purposes, EBS record keeping practices need to be improved.

> **Recommendation 7:** *MOE should develop a cost-effective and sustainable monitoring and evaluation framework.*

> **Recommendation 8**: *A database of center, student and mentor profile will be more desirable and efficient than the current spread sheet that is used. This will allow greater manipulation of data (e.g. tracking performance throughout the entire primary cycle). Ideally, this would be institutionalized into the operations of EBS and/or the MOE's Planning Unit.*

The MOE's effort in providing alternatives to reaching disadvantaged learners is to be commended. Now that the program has gone nationwide, and there will soon be several cohorts of the program, policy decisions on the issues outlined above will need to be considered to ensure that IRI maintains desirable educational standards and that IRI remains accessible to disadvantaged learners in Zambia.

5.0 APPENDICES

Appendix A: Data collection sheet for students' profile

Appendix B: Content Map for Grade 1 English

Appendix C: Content Map for Grade 1 Mathematics

Appendix D: Test Blueprint for Grade 1 English

Appendix E: Test Blueprint for Grade 1 Mathematics

Appendix F: Test Plan for Numeracy and English Literacy for Grade 1

Appendix G: Grade 1 Numeracy and English Literacy Test

Appendix H: Training Notes for the Administrators

Appendix H: Training Notes for the Administrators

Appendix I: IRI Success Stories

Appendix A - Data collection sheet for students' profile

Center: _____

C#	ID	Name	Age	Sex	SchAtt	Reside	Live With?	Sibling?	Parent Alive?

_____

Appendix B - 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 C - 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 D - 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 E - 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 F - 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)
Counting		***7.1; 10.1***		*3 (C)*
Number Operations (addition, subtraction and multiplication)			***4.1; 5.1; 6.1***	*3 (A)*
Classification and Comparisons	*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 G - 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	*Present all colours in any order.*
12. What is this?/What is _____ wearing?	dress; hat; shoes; socks; shirt	*Allow a second chance if necessary*
13. What time of the day do you get up/go to bed	morning; evening; night, or any specific time	*Allow a second chance if necessary*
14. What can you see in this picture? What are they doing?		*Present the picture on the learning center scene*
15. Can you see _____? Is _____?		*Ask several questions about the picture to elicit "yes" or "no" responses.*
16. How many children can you see? women? radios?		*Use language associated with counting.*
17. Which animal do you like/do you not like?	animal, food, friends, colour	*Ask both the "like" and "do not like" questions about any of the items*
18. Where is the book?	Under, in, on top of, here, there, on, in front of,	*Present question involving prepositions or adverbs of place*
19. Here is one stick, and here are two _____.	book; hand; pen; leg	*Present two words involving plurals. Allow a second chance if necessary.*
20. Read these letters	A – Z; a - z	*Present any 5 letters of alphabet randomly*
21. Read this word What are these letters?	box; man; boy; pen; pot; dog; cat; table; shoe; hand; pen; car, leg; door; pot; spoon	*Present two words and ask them to read. If not, ask them which letters make up the word*
22. Spell _____	man; boy; pen; pot; dog; cat; pen; car, leg; door; pot; spoon, red	*Present two of these. Allow a second chance at reading if necessary.*

Appendix H - 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 I – IRI Success stories

There are many stories from IRI centers around the country. Most come from places that are struggling but where mentors, communities, churches, MOE officials, are doing an impressive and commendable job. A few selected stories are presented below.

"IT'S ACADEMIC!" RADIO QUIZ

At the end of Grade One, Chikuni Community Radio Station decided to organize an "It's Academic!" radio quiz show for all centers and also invited local schools to participate. Fr Thadeusz asked a couple of teachers from local schools in Monze to develop questions based on the Grade One curriculum. The children from the centers answered virtually all the questions correctly, and since no centers were being knocked out of what was supposed to be a competition, the teachers were asked to make the questions harder! The gratifying aspect for the IRI program was that rural centers did just as well as centers closer to towns, and in fact won the competition.

MENTORS WITH A DIFFERENCE: MR MVULA

Garden Center began in July 2000 as part of the Learning At Taonga Market pilot program. The mentor, Mr. Mvula, originally taught the children in a Hope for Africa building in Garden Compound. After a few months, Hope for Africa closed its doors to Taonga Market suddenly, forcing Mr. Mvula to look for a new place in which to teach. At the same time, he was evicted from the home he and his family had been renting. The families of the 100+ children supported him and the center, but they could not give monetary or even in-kind support to him.

The headmistress of Ngwelele Basic/Primary School had heard about and visited Mr. Mvula and the children as they learned at Taonga Market. She was very supportive and encouraging all along. When she heard that Hope for Africa had sent them away and that they were now squeezing into a tiny shelter behind a house in the market, she offered some space on her school grounds. Since then, they have been learning from within the school compound under a tree. During holidays, they learn from an empty classroom. At one point during Grade One, Mr. Mvula realized he had far too many children to teach alone. Also, the children had to walk long distances from other compounds since he was the only one teaching for free. He met a woman who volunteered to teach some of his children in the neighboring Chaisa Compound, and so he invited her to observe his classes until she felt comfortable enough to try it herself. Ms. Phiri did this, and under his guidance, training and encouragement, she opened another center in neighboring Chaisa market, which they have named Garden 2.

MENTORS WITH A DIFFERENCE: MR MATIMBA

Mr. Matimba of George Compound has trained at least two assistants to help him with his Taonga Center of over one hundred children. Even on surprise visits, we *always* find him at the center. Mr. Matimba has given the lead role to one of the assistants but does not leave the children even when an assistant is there. He is more than willing to help mentors in other communities and is extremely hard working and diligent. The children love him, because he treats them fairly and takes extra time to teach them when it's necessary.

MENTORS WITH A DIFFERENCE: MS MUMBIKA

Ms. Mumbika from Misisi Learning Center came to EBS in search of support for her center. For three cycles she has continued volunteering but now she is really struggling to make ends meet. She has no income and the community is not helping. Chawama, a neighboring center, had their radio stolen, so she invited them to join her class in Misisi. Now they share a structure and a radio. Ms. Mumbika told us that several times when she has been sick or too discouraged she tried to stay home from the center. She could not stop—the children followed her home and begged her to teach them!

A LITTLE HELPFROM FRIENDS

The headmaster of Mununga School in Mpika is supporting an IRI center. Though he did not have too many resources, he donated his own radio, provided a venue (in his home where there is access to electricity because batteries were too expensive) and also provided a mentor – his wife! He is also providing chalk and a board and giving the children, most of them orphans, a chance to learn!

CREATIVE MINDS

One mentor could not find chalkboard anywhere. Yet, he really needed one. Then he realized that he actually had all the resources needed to make one. He and other mentors gathered soil from termite mounds and plastered it onto boards and portions of walls to create chalkboards for the learning centers.

Pride should not spring just from having expensive things. Mentors in Mporokoso, Northern province were so proud of their center that they made a sign announcing its existence and posted it on the nearest road. . . it just so happens that the nearest road is thirty kilometers away from the center! But people are finding them, and they know that the community is working together to teach our children.

In another center, because they had no money to buy chalk and other things for the center, they started a vegetable garden right next to the center. Now they sell the produce to buy chalk, pencils and books. Because chalk was too expensive and town

was too far away, another mentor decided to use what he had in his area. He found white clay soil and molded it into sticks of chalk, which he used to teach. A kind head master finally provided him with chalk.