

FINAL REPORT

**PILOT PROJECT FOR ZAMBIA'S
INTERACTIVE RADIO
INSTRUCTION PROGRAM
FOR OUT-OF-SCHOOL CHILDREN**

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Submitted to

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By Education Development Center Inc.

INTRODUCTION AND SUMMARY

This report is submitted as part of the requirements for the Educational Development Center's (EDC) grant from the United States Agency for International Development (USAID) to provide technical assistance to Zambia's Educational Broadcasting Services' (EBS) Interactive Radio Instruction program. The goal of the Interactive Radio Instruction (IRI) program is to make basic education more accessible to orphans and other vulnerable children of school-going age who are currently unable to access education through conventional means.

In February 2000, USAID provided EDC with a \$69,000 grant that was matched by a similar amounts from the Banyan Tree Foundation and EDC itself to provide technical assistance to EBS for a pilot that broadcast 100 half-hour lessons from July to December, 2000 in 22 radio learning centers in Lusaka, Chongwe (Lusaka rural) and Monze (Southern province). The programs integrated Grade One Maths and English from the national curriculum. Learners were tested in the first week to establish a baseline and again after 50 broadcasts.

The results indicated that there were significant learning gains. Moreover, the pilot demonstrated that mentors in centers could operate the radio-based learning system and that there was an appetite within communities to use them. Enrolment started at an average of 60 learners per class and after ten weeks, the average enrolment was 47 children.

District	Center	Registration At 7/24/2000	Attendance at 10/16/2000
Chongwe	Nang'ombe	85	83
	Nchute	49	10
	Mwachilele	66	34
Lusaka	Bauleni #1	49	45
	Bauleni #2	46	51
	Garden	56	36
	Kamanga # 1	100	104
	Kamanga #2	100	102
	Ngwerere	46	19
	George #1	98	47
	George #2	49	49
	Misisi	55	44

	Chainda	44	40
	Kanyama	94	
	Jack	53	40
	Chipata#1	44	45
	Chipata #2	44	45
Monze	Hanamaila	46	42
	Singwena	46	41
Kafue	Mapepe	49	35
Chilanga	Mimosa	35	23
Total	All centers	1254	935
Average	All centers	60	47 (78%)

Average daily attendance was remarkably high among the 78% of initial registrants who remained with the program after 50 lessons. Of these children, the average attendance was 41 lessons of the 49 broadcast.

Children learned from the radio. An analysis of the test scores on the pretest and post-test captures where most learning took place.

Skill Area	Items	Prescore Mean	Postscore Mean	Gain Score
Production of language	Item 1	80.8	95.8	15.0
	Item 2	80.5	97.6	17.0
	Item 12	28.4	69.2	40.8
	Item 13	20.5	22.4	1.9
	Item 19	57.9	71.7	13.8
Comprehension of language	Item 11	34.7	80.8	46.0
	Item 14	66.8	88.8	22.0
	Item 15	61.8	83.9	22.1
	Item 16	65.5	87.1	21.5
	Item 18	51.6	86.0	34.4
Writing	Item 20	51.8	76.6	24.7
	Item 6	64.7	86.4	21.6
Recall of names and shapes	Item 17	26.6	61.5	35.0
	Item 7	79.7	83.2	3.5
Counting	Item 10	43.7	70.3	26.6
	Item 3	98.7	100.0	1.3
	Item 4	96.3	100.0	3.7
	Item 5	76.8	93.4	16.5

Adding and subtracting	Item 8	70.8	92.0	21.2
	Item 9	60.5	86.0	25.5

The highest gains occurred where learners knew least. In the area of comprehension of language, mean gains were between 21.5 percent and 46.0 percent. More learners could understand more language after 50 lessons than they could after 5 lessons, with as many as between 21 percent and 52 percent of the learners becoming masters of certain comprehension tasks. Mentors reported that these learning gains manifest themselves in the fact that they do not have to translate everything that the radio teacher says as they used to in the past. Gains in counting were minimal because most children knew how to count when they started. The item that tested possessives (“his”, “hers”, “theirs”) demonstrated that children did not know how to use them before or after the radio programs, which is partly a function of the quality of the instruction but also because arguably they should not be included at this level of language competence.

These results provide quantitative evidence of what we observed. Children and parents alike appreciate the learning style of the programs and compare them favorably to what is happening in schools. The role of the mentors is recognized as critical to the success, and ways to keep them motivated to attend everyday is a major priority for everyone. The writers and producers have made great progress in crafting programs that can achieve these results. However, we all understand that the quality has to improve and that the Grade 1 programs were as much an extended training workshop as they were a test of the methodology. They will get better with more assistance.

Finally, the pilot has allowed EBS to demonstrate to the potential users of the system that it is worth investing their time in supporting it. A significant core of private sector organizations and communities have pledged their support for 2001, and we look forward to working with them.

1. THE PILOT PROGRAM

The pilot program provides instruction in Mathematics and English language to learners who do not attend formal schools, although the Zambian Open Community Schools have also expressed an interest in using it in 2001 in their 40+ level one classes. It follows the Zambian curriculum and teaches the Grade One curriculum in 100 30-minute programs. Learners meet for a short time each day, and are taught by the radio and a mentor. Communities provide a venue, a radio, a board and a literate mentor. Most mentors who are

participating in the pilot have completed secondary school and they received a three-day training in how to teach with the radio. They are provided with a guide that explains clearly what is to be taught each day, how the mentor should be prepared, and what the mentor should do before and after each broadcast. Learners were tested in the first week and after 50 broadcasts. This evaluation describes the outcomes of the 10-week, 50-lesson experience in terms of enrolment, attendance and achievement.

1.1. The genesis of the program

In 1998, EBS Controller Mrs Faustina Sinyangwe traveled to South Africa to see the OLSET “English in Action” radio program which is used in the first three grades of primary schools. Seeing IRI’s effectiveness in schools in South Africa, EBS resolved to try something similar for out-of-school children in Zambia, of whom there are an estimated 800,000. NORAD and the Ministry of Education provided new studio equipment for two EBS audio studios, but no program production took place until the Controller and Deputy Controller, Mr Forster Lubinda, with assistance from USAID, attended a short course in Washington at the Education Development Center (EDC) in writing for interactive radio instruction (IRI). EDC has been working in IRI since the 1980s, managing multicountry projects for USAID and continuing innovations in IRI design and application. That initial training provided the impetus for the design of the pilot program that is now being evaluated.

1.2. USAID’s support to the program

EDC provided a short follow-up training program in November out of its own funds, and in April 2000 USAID provided a grant of \$69,000 to EDC to assist EBS to develop 100 30-minute lessons for Grade One. EDC secured a matching grant from a foundation, and EBS received a donation of 40 wind-up radios from the Freeplay Foundation. The USAID grant provided funds for short-term assistance to train EBS writers and producers, to develop a training program for mentors in the 27 centers that have participated in the pilot, and to evaluate the impact of the programs on learning.

1.3. BESSIP and the program

The activity is not a stand alone effort, it is an integral part of the Ministry of Education’s intent to provide education for all Zambian children. The program falls under the gender equity component of the BESSIP program, the MoE’s umbrella project for investment in education in Zambia, which is supported by most donors. Under the planned re-organization of the Ministry of Education, EBS will fall under the newly created Directorate of Distance

Education whose principles objectives include the following:

- to promote community participation in the provision of education;
- to facilitate and provide education to the disadvantaged and vulnerable groups;
- to increase access to education for all Zambians.

The purpose and strategies of the IRI program are plainly central to the MoE's ability to meet these three objectives.

The program will make use of more than EBS staff alone. Although the primary outreach initiative must come from communities and the private sector, there are continuing education staff in every district, who also fall under the Directorate of Distance Education. District Education Offices have been used under the pilot as collection points for mentors' guides, and the Chongwe DEO played a strategic role in reaching the wards and communities as part of the early mobilization effort. This program is thus integrated into the government's plans to provide education for all children, including the large number out of school.

1.4. Objectives for this out-of-school audience

The 100 lessons are designed to cover the entire MOE Mathematics and English language curriculum that is taught in conventional schools. However, many of the learners who constitute the target group have broader needs than literacy and numeracy alone. Many have lost one or both parents, and in some cases may be leading large families of younger siblings and cousins. Consequently, the programs have a number of crosscutting themes relevant to the social development of the learners, and a five-minute segment in each program that explicitly addresses life skills, which encompass issues in hygiene, nutrition, reproductive health, social values, practical survival skills – in short, the kinds of skills and issues that parents and teachers might usually be expected to address. In the higher grades, this segment will also include HIV/AIDS awareness.

1.5. Program design: how IRI works

Interactive radio principles and strategies were first developed in the 1970s to address the poor quality of mathematics instruction in Nicaragua, and USAID has supported subsequent application to other subjects, purposes and audiences in the nearly thirty years since then. It has now been applied in more than twenty countries, and is currently being used in South Africa, Guinea, Cape Verde, Ethiopia, Haiti, Lesotho, Bolivia, Costa Rica, Honduras, Nepal, Thailand, El Salvador, Venezuela and is being considered in Chad, Somalia and Rwanda.

It works because it promotes active learning, provides much more practice than is common in many primary schools, takes pains to involve the teacher, is carefully designed and organized in terms of the pacing and sequencing of learning, and is fun. IRI was essentially a rediscovery of the power of radio to teach, but to do it in a way that used games, songs and other learning activities. The focus switches from the teacher teaching to the learner learning. Children enjoy learning and teachers learn how to make learning enjoyable and productive.

1.6. Organizing for out-of-school children

EBS is a broadcasting institution that has neither the staff nor the skills to organize community-rooted learning centers. It provides the means to learn, not the management of learning. It must rely on communities themselves and public and private sector organizations that work with them to organize and manage learning centers. The ability to recruit and retain mentors and to provide somewhere for them to meet learners is a critical factor in the success of the program.

Out-of-school children often lack resources like pencils and paper, so learning must be shaped to “make do” with what is locally available. Orphans may have fewer organizing influences in their lives so that regularity and promptness of attendance may be problematic (although the evaluation found that about 75% of children who did not drop out entirely attended everyday). Motivation to attend each day may be different from that found in conventional schools, though not necessarily lower, but circumstances that govern their attendance may be constraining.

So the design, construction and maintenance of a network of organizations that will mobilize mentors and learners is probably the greatest challenge that EBS faces. For the pilot, EBS turned to local community committees, churches, DEOs, and local councils and politicians to establish centers and identify mentors and to recruit learners.

1.7. Training EBS staff

Following the EDC course in Washington DC in August 1999, EBS writing and production staff received an initial two week training program in Zambia from Cecilia Crespo in November 1999. This was followed by seven person months of on-the-job training in script writing between April 2000 and October 2000 delivered by Mr Mike Laflin, Dr Sera Kariuki and Ms Cecilia Crespo. This in-country training was supplemented by script review in Washington DC, using

an e-mail connection that was established at EBS. The quality of the initial scripts and those developed by program 50 is very different and reflects the growing competence of the writers. The same goes for the production quality which improved markedly in August 2000 following intensive training provided by Mr Alvaro Cisneros.

Experience elsewhere suggests that it takes about two years for a writer to become truly skilled in the craft, and it looks as if Zambians will be no exception.

On-the-job evaluation training was provided by Dr Kathleen Letshabo for a small number of EBS staff and consultants in the course of conducting the baseline survey in July 2000 and the evaluation after 50 programs in October 2000. But most EBS writers were consumed by the task of making programs and therefore not available to participate in the evaluation, which has lessened the impact on EBS as an institution of understanding the nature and importance of evaluation processes.

EBS writers were also introduced to computers. Two writers are now using computers to draft their scripts for themselves rather than passing handwritten scripts to typists, and three people are conversant with using Microsoft Word to lay out the mentor's guides. EBS writers did the layout of the guides to programs 61-80 by themselves.

1.8. Writing, production and formative evaluation

1.8.1. Translating the curriculum into 100 30-minute lessons

In March, 2000, EDC advisors found that EBS writers had written a small number of lessons but were making slow progress because the format drawn up by Curriculum Development Center staff did not correspond to an IRI masterplan. So a master plan was developed with the writers that used the syllabi and Teachers' Guides for Mathematics and English, and broke down the curricula, unit by unit, into 20 weeks of radio programs. The group then broke down each of the 20 weeks into five 30-minute lessons, which included the objectives, structural components and vocabulary for each lesson.

The masterplan balanced Mathematics and English objectives. The Grade 1 curriculum has considerable repetition in both subjects, and, while the content of the masterplan was directly derived from the curriculum, the radio programs teach some concepts earlier or later than is the case in the conventional schools. The entire curriculum for English and Mathematics fitted into in 18 weeks, leaving weeks 19 and 20 for revision of difficult concepts.

1.8.2. The lesson format

Each script follows a specific format, made up of several segments, which

was agreed upon by the group after much discussion and negotiation. Each lesson begins with the same signature tune which is followed by an opening theme song. Most of teaching occurs through Mrs. Musonda, the main character who then introduces the lesson, giving specific instructions to the mentor and warning him/her of what to expect.

The introduction is followed by a review of at least one major concept from the previous lesson. This can be done in a variety of formats. Often, it is done through song or games. Then there is an introduction of the key vocabulary for the day's lesson after which the actual teaching begins with the modeling of the first objective (either English or Mathematics).

The lesson then moves to a visit to Taonga Market. This segment is always a drama related to one or both of the days' objectives. Through Ambuya, the grandfather character who works at Taonga market, it often reinforces a concept that has been introduced. Sometimes it introduces a new concept. The drama is followed by a comprehension segment, which typically poses questions on who, why, or what happened at the market. Then all or excerpts of the drama are replayed for reinforcement.

At this point, an activity is introduced to practice the skills introduced in the first objective. This is followed by a reinforcement of a previously taught skill from an old lesson. This is intended to have the dual purpose of helping children who might have missed some lessons as well as continuous assessment of what has been taught.

The second objective is then introduced. Due to the integrated curriculum, each lesson is expected to have at least one new English objective and one new Mathematics objective. However, every fifth lesson is dedicated for review and revision of difficult concepts that might not have been thoroughly covered in the lessons in which they were introduced. At this point, depending on the length of the script, there might be another visit to Taonga Market followed by a comprehension segment and a replay of the drama. An activity or drill is then introduced to practice the second objective and a reinforcement of a previously taught skill.

The next segment is the *Ambuya's message*. This is dedicated to the life skills issues that children without parental guidance need to be taught. It is often done in form of drama or story and often requires a return to the market. Ambuya uses a depicted real-life situation, often with the radio children Thoko and Nyambe, to teach desirable manners, life choices, health and hygiene, etc. Sometimes, this segment is tied to the objectives taught earlier in the lesson.

Each lesson typically ends with a review of the day's objectives and a treasure hunt, which is a suggestion of items that would be needed for the next lesson or week, such as stones or bottle tops for counting, and a closing song.

1.8.3. Activities before and after the lesson

Each lesson suggests pre- and post-broadcast activities. The mentor's training emphasized the importance of these sections in the guide.

Pre-broadcast activities are designed to assist the mentor prepare for the lesson so that there are no surprises. The mentor is told to display or be prepared to display such things as color charts, drawings, different shapes, to write, or even to bring people or different objects to the center depending on what is being taught. The mentor might also be reminded to check that the children have the necessary materials or to learn the words of a new song which are found in the mentor's guide. While the lesson is written in such a way as to accommodate the mentor who may have forgotten his/her guide, the mentor who has read the pre-broadcast reminders and prepared will have a more effective lesson.

Post broadcast activities are equally important. Radio has its limitations and the programs require that the mentor take some time to ensure that the children derive maximum benefit from this type of learning. Hence, in the mentor's guide, or at the close of the broadcast, there are suggested post-broadcast activities. Suggested activities are designed to help the mentor reinforce learning in an organized and systematic manner. This creates an opportunity for the mentor to give individual attention to children, especially those who might be lagging behind. For example, most of the lessons introduce letters and numbers by simply asking the mentor to demonstrate the writing on the board. The mentor must practice writing with the children after the broadcast. Sometimes, the suggestion might be to elucidate the life skills message in the local language and discuss similar situations. Post broadcast activities are therefore a critical element of the entire process.

1.8.4. Maintaining the pace

The first broadcast was on July 24th, 2000. At that time, we believed that a cushion of 30 recorded programs was needed. Instead, there were approximately a dozen and EDC advisors were very concerned indeed whether that was sufficient to guarantee that EBS would be able to keep up with the broadcast schedule. As of early October, with about 50 programs having been broadcast, that same cushion of approximately a dozen programs has been maintained, and nearly all of the programs have been written. In the meantime, the writers' commitment to excellence coupled with a highly intensive pattern of technical assistance has resulted in an improvement in program quality. All

programs have been written by EBS staff. In the interests of institutional capacity development, EDC advisors have reviewed programs and have provided detailed comments and suggestions but they have resisted the temptation to rewrite the scripts. For the most part, EDC advisors have tried to capitalize on the writers' relevant training and experience as teachers, while encouraging more thoughtful application of various IRI principles in order to ensure that meaning is attached to learning.

1.8.5. Production

Production started off from a lower level of competence. Although the three technicians had been trained at ZNBC and were thought to have adequate production skills, they actually possessed limited mechanical skills and virtually no sense of production quality. Besides, since there was no production going on at EBS, there had been no opportunity for them to practice any skills they had learned at ZNBC. Basic skills like recording levels and timing had to be taught, and the programs still need radical improvement in their production values. Only two producers had worked in a studio before and the rest had no experience at all. The studios themselves need upgrading before they will permit good production.

1.8.6. Formative evaluation

A small center has been established at EBS, attended by about 40 local children. Each day, writers take turns to be mentors and test their programs. This formative evaluation information is fed back into the program, and lessons learned are fed forward into new scripts. Time constraints have meant that few programs receive sufficient revision, and EBS writers understand that a major review of Grade One programs is needed before moving on to Grade Two.

The baseline data was collected in late July in Lusaka and Chongwe and the follow-up evaluation was conducted in the second week of October. Both were led by Dr Kathleen Letshabo, a testing expert from Botswana.

1.9. Recruiting and supervising centers

The pilot has a total of 27 centers: two in Monze, eight in Chongwe, and the remainder in Lusaka. Some of the centers in Lusaka are so far out of the city that they are effectively rural centers. Most centers are difficult to reach and supervision of the centers by EBS has been spasmodic and in some cases has not happened. Supervision and support from community committees has been similarly variable. Some committees have supported mentors with food and a small stipend. Some mentors have received no support and two mentors stopped working at all. The Monze centers have been well-supported by the Catholic priests who set them up.

Lack of transport at EBS has been a serious problem. Essentially, only the Controller is mobile. Writers have visited centers to observe their programs only twice.

The demand for centers and places in centers far outstripped the scope of the pilot. In Lusaka, one center would have been able to register six hundred children, and several had to choose learners from more than 200. The average enrolment in pilot centers was 60 children, and the average attendance each day after 50 programs was still 47 learners, despite the recommendation not to exceed 40 children per class. In that sense, it is very encouraging for the future. During the evaluation we have received requests of assistance from several centers which have been set up spontaneously with no assistance from EBS.

1.10. Training mentors

27 mentors were trained from July 13 - July 15, 2000 at the Pre-Cem motel in the outskirts of Lusaka. EBS writers designed and delivered the training, which capitalized on the advantages of IRI and was highly interactive and fun. Rather than lecture, the presenters involved the participants throughout, eliciting their opinions and suggestions.

Participants watched a demonstration of an IRI lesson, with assistant controller Jean Mubashi, as the mentor and participants as the learners. This was followed by a discussion of the lesson. Participants were encouraged to comment on the mentor's style and manner, as well as what they felt worked or did not work well during the lesson.

Participants then watched an IRI video of the out-of-school program in the Dominican Republic, which was followed by a discussion led by EBS producer Phaniel Besa on the effectiveness of IRI, the role of the community in supporting the programs, and the role of the mentor in the community and the classroom. Participants broke into two groups, each group selecting two participants to act as mentors while the rest were the learners. The entire group discussed what had worked or had not worked with EBS producers providing feedback.

EBS producer Peter Phiri discussed the Mentor's Guide, emphasizing the importance of using the guide each day to prepare teaching aids with locally available materials, learning the words of the teaching songs, learning English vocabulary words and ensuring they know the local translation, practicing writing and other activities after the broadcast, etc. Following this discussion, participants broke out again in groups and practiced another lesson. By this time, the participants were feeling more comfortable with each other and were

starting to give constructive criticism to their colleagues with a little prodding from EBS staff.

Producer Mulemwa Mulemwa talked about the administration of centers, pointing out how the partnership between the Ministry of Education, communities, volunteer mentors and learners must operate if children are to learn effectively. Mentors learned of their critical roles as representatives of their communities, but also learnt of their communities' responsibility to them, the children and the centers. It became plain that some communities had committed more support than others, and mentors were encouraged to get their communities involved and assist in ensuring centers had radios, batteries, and a board, providing a safe place to store resources, following up with children who frequently missed classes, providing a venue and seating for learners, help with making visual aids or collecting local materials for the learning kit, etc. Another practice followed. By this time, the discussion was very animated and many participants were initiating the feedback and critiquing each other, with very little guidance. After dinner, participants practiced another lesson, more songs and games and watched other IRI cases around the world.

On July 14th, the day's activities opened with a presentation led by producer Maureen Tandy on mentor's kit, games, songs and other activities. She stressed that the effectiveness and success of IRI hinges on the fact that children enjoy the lessons and participate enthusiastically. The lessons teach educational objectives in an entertaining way and typically consist of songs, games, riddles and physical activities which engage the children and demand their response. This presentation also discussed the importance of mentor's kit, which is a collection of a variety of teaching materials or teaching aids *prepared by the mentor*. It includes such things as stones, sticks, word cards, number cards, letter cards, shapes (cuttings or real objects), and other teaching aids that can be found locally or can be made from locally prepared materials. Participants were shown how to use simple materials like paper, old pieces of cloth, water and flour, mealie meal, etc. to make teaching aids such as colour charts and shapes. Participants also came up with their own long list of suggestions of useful materials found in their local areas, such as mats for posters, thorns for nails, tree gum for glue, charcoal for chalk, etc.

Mentors broke out in groups again for the fifth practice. On this day, children from a neighbouring community school to joined us in the training to make the practice more realistic. Though initially nervous, the children and their teachers enjoyed the lessons. Producer Justina Chikomo then led a presentation on characteristics of a good mentor, drawing responses from mentors based on their experience of the two days. The rest of the day was spent in break-out sessions to practice more lessons. Each mentor was provided with a mentor's

guide.

1.11. The mentors' guide

Next to the radio, the most important tool that facilitates learning at the centers is the mentor's guide. The guide is intended to be a daily point of reference for mentors. The mentor should know exactly what learning objectives are included in the day's lesson, what the mentor should have ready, and what activities the mentor should lead before and after the broadcast. See the Appendix for sample pages from the guide.

Mentors are encouraged to use the mentor's guide when preparing for the lesson, and during the broadcast. Mentors reported during their focus group interview that the mentor's guide was generally useful. It helped the mentors when preparing to the lessons, and to clarify issues that they were unsure of. However a number of problems were identified. These included overloading the lessons with learning objectives, sequencing of the mathematics material, using difficult tunes in songs, putting a lot of emphasis on theory without giving enough time for practice, and errors that resulted in mentors being ill-prepared for some lessons.

Mentors reported that while the mentors guide was useful, it was still possible to work with the radio teacher alone and still conduct the lesson well.

Even before the lesson starts, the radio teacher tells us that in the lesson today we are going to learn such and such... if it is drawing on the board you can easily draw from the instructions that are given ... (Mentor: George)

You can find that you have the mentor's guide, and the radio teachers tells you something that is not in the mentor's guide... it could tell you to draw a bird or a man, but in the mentor's guide it won't be a bird or a man. It will be something else... (Mentor: Kamanga)

Use of the mentor's guide could also distract their attention from the broadcast at times. An example that was cited is the distraction associated with songs in the broadcasts, where mentors have to be learning the tunes that accompany the lesson and at the same time teach it to the children. In earlier broadcasts, new lyrics were used with common tunes. This strategy worked well.

Mentors expressed the desire to be given the opportunity in the mentor's guide to evaluate every lesson

I can say the guide is good to use because there are times when you are told to

write a word... sometimes you cannot hear it properly from the radio or you're unsure about the spelling... (Mentor: Mapepe)

I personally feel that there should be a part where we write to say and explain how we found the lesson as mentors ... (Mentor: George)

Mentors were unanimous in their view about the usefulness of the mentor's guide as an additional resource. They reported that they relied heavily on the guide for conducting the lesson during the earlier broadcasts, and were not referring to it as frequently as they used to during the course of the broadcast. Suggestions were made that the mentor's guide ought to be improved in terms of agreement between information contained in the guide as compared to the radio broadcast, and a resource to which mentors could turn for more ideas and teaching strategies.

These omissions and mistakes in the pilot guide for Grade One will be corrected after the programs have been reviewed and revised, and before printing. The guide at present contains no guidance on the evaluation of student learning after each lesson. The guide contains the words for the songs, but little explanation for the mentor of how to play the games or lead the activities included in the broadcasts. This will also be added.

1.12. The launch

The pilot was officially launched by education minister Hon. Gen. Brigadier Godfrey Miyanda on July 24th, 2000 in Jack Compound in Lusaka. Donors, including the Norwegian ambassador and USAID officials attended. The Education Deputy Minister, Permanent Secretary and Deputy Permanent Secretaries, Director of Planning and other high level ministry officials, representatives of bilateral and non-governmental organizations as well as a wide range of politicians, including ministers, members of parliament, the mayor of Lusaka, community development groups, private sector representatives, ZNBC Managing Director, area schools and several interested individuals came. In his speech, Hon. Miyanda focused on the high numbers of out-of-school children and youths in Zambia and underscored the government's commitment to make education accessible to all.

2. THE EVALUATION

The purpose of this evaluation study was to collect baseline information against which learning gains could be measured after 50 lessons. The evaluation also presents lessons learned about EBS's institutional performance and from other implementation processes. Specific questions asked during the baseline

and mid-point review included:

- Are the learners coming?
- Are learners staying?
- How much do learners know as they come in?
- Are the learners acquiring mathematics and language skills?
- How well are mentors facilitating interactive radio instruction?
- What are the community expectations about the IRI project?

Data on demographic characteristics of the learners was collected in order to describe who is coming to receive the radio broadcasts at the centers, and enrolment figures to estimate the number of learners who are registered. Achievement scores were used to describe how much of Grade 1 level Math and English learners knew during the early stages of interactive radio instruction, and the gains that they had made after 50 lessons. Descriptions of the physical conditions at the learning centers and community expectations about the IRI project are also presented.

2.1. Centers, Mentors and radios

2.1.1. The Centers

There is a wide variation in the centers in terms of support, resources and accessibility. In Lusaka, the pilot centers are located in the compounds. In Lusaka, the churches were instrumental in getting the communities interested in the program. The EBS controller and a small number of volunteers worked with different church groups over a period of several months, going into the communities with sensitization messages. Community members got a chance to ask questions about the program while EBS controller explained what the ministry envisioned in seeking the partnership with the communities. In almost each case, communities reported a very high number of out-of-school children.

In Lusaka, most centers are made of concrete. In some cases, the center is an empty warehouse with no board, desks or benches. Some were offered by churches and had benches for the children. Some even had pictures and a variety of visual aids on the walls. One center was supported by an NGO and though it was located in a market, it had a board, chalk, and desks and the NGO bought the radio and provided their community school teacher as the mentor. In another compound, the community offered the community hall for the center but due to a large number of children, a second afternoon center had to be set up in the yard since other people were using the hall at that time. Elsewhere, a local businessman offered a huge building, with desks and a board and the mentor registered over 120 children. However, just before the launch, they were evicted, forcing the mentor to move the center to his home.

In Chongwe, where EBS had worked with the local councillors to gain

access into the communities, each councillor initially wanted a center in his/her ward. However, only eight out of the fifteen wards were represented at the training and EBS decided to pilot in those. In Monze, Catholic priests who run the Chikuni Community Radio station approached EBS after hearing about the IRI program on T.V. They organized the communities and have provided tremendous support to the mentors.

During the second and third week of July 2000, efforts to mobilize communities to prepare for the commencement of the IRI intensified. One of the activities undertaken was to collect data about the mentors, the number of learners mobilized for each center and the characteristics of the facility that was to be used as a learning center. Data that were collected about the learners forms part of the record on enrolment and registration (see Appendices B and D for data collection instrument). Information on the mentors and the centers and other characteristics of the learning environment is summarized below.

By the time of the mentor's training, some communities from the original pilot list were dropped mainly because they did not send a mentor to the training. It was discovered that such communities were not adequately prepared to participate in the pilot and had not organized themselves enough to provide a center, a mentor or mobilize the learners. By several accounts, these communities have as much and perhaps even greater need (e.g. in the case of Ngombe) than the ones participating in the pilot and we acknowledged the need to followed up on them.

In one case, mentors did not attend the training due to breakdown of communication. These along with other mentors from centers that had too many children and had taken the initiative to identify a second mentor were accommodated in a half day training at EBS on July 21st, 2000. Other communities were included after they heard about the programs on radio and T.V. and approached EBS. For example, Kamanga center started off in the mentor's home but later moved to a community hall as the community became interested in supporting the mentor's efforts.

2.1.2 The mentors

The majority of the mentors that were recruited for the learning centers were males. Most had completed Grade 12 and all had some secondary education. All mentors who were recruited initially received training by EBS staff on how to facilitate interactive learning delivered through the medium of radio. With the exception of only one mentor, the original mentors were still in-charge of their centers at the mid-pilot assessment. Some mentors had been joined at the centers by an additional person who did not receive the initial EBS training. A number of individuals had prior experience as community school

teachers and nursery teachers, hence not all mentors were strangers in the business of educating children. On the whole, mentors have performed their duties diligently. Most mentors conduct the lessons daily, and have retained the enthusiasm that they had during the first week of the program. A number of them would be good facilitators in the round of mentor training.

2.1.3. The radios

Information collected on the characteristics of the center included whether or not the center had a radio, a chalkboard, and chalk. All centers had a radio at their disposal at the beginning of the IRI program. Only two centers reported that they had a community-owned radio. In most cases mentors used their own personal radios, borrowed radios from community members, or rented from a community member. In some cases when the radio was available, there was still the problem of how to get batteries to power the radio since most facilities did not have electricity. Some communities took it upon themselves to provide batteries. For most centers, problems with radios were solved when EBS got a donation of 40 wind-up radios from the Freeplay Foundation. All but a few centers had started using their wind-up radios at the time of the mid-term review. But some problems were reported.

We got one radio [from EBS] but its not working... just somebody who has given it [the radio] to us. We use it then we take it back... It uses batteries... and normally we get the batteries from members of the community. Some the parents give K100 to the children to contribute towards the batteries... (Mentor: George)

Mentors had a number of concerns about the wind-up radio. A number of radios were malfunctioning, while one had stopped working. The sound quality was reported to be poor, and could deteriorate to inaudible hisses when the need to increase the volume arose. The mentors also reported that after winding it up completely, the radio could only run for 25 minutes, while the lesson time was 30 minutes. However, a solution was offered on when to wind the radio up so that important lesson content could not be interrupted.

I have discovered that immediately after that song... Taonga Market, just wind it to the end, then the whole program will be over... and even the next program... you can still wind the radio so that you cover the whole lesson... (Mentor: Mapepe)

On the whole, all centers, even those which had not yet received their wind-up radio such as Mwachilele and Ngwerere, were still receiving the daily broadcasts. Kamanga center reported that they had got a radio donation and other learning materials from a Japanese NGO. Other learning material that centers had included a chalkboard and some chalk. Parents at some centers were

buying stationery (exercise books, pencils and crayons) for their children, while in a few cases community members were donating items such chalk.

2.2. Profiles of learners

The profile of the learners was prepared from data collected initially in the first two weeks of the program, and updated throughout the implementation period as new information reached EBS (see Appendix C for data collection instrument). Most learners from the Lusaka and the surrounding centers are included. Data on learners from the Chongwe and Monze centers were included, even though some parts were incomplete.

2.2.1. Sex and age of learners

Of the learners enrolled at the learning centers, 48% are female while 52% are male. A similar pattern of enrolment is observed in urban and rural centers where there are slightly more males than females enrolled. The mean age of the learners is 8.5 years (median is 8 years old) where the youngest learners are 5 years old, and the oldest are 14 years. The mean age is 8.3 years for females and 8.6 years for males. This trend was expected since school going males are usually older than females at the lower levels.

2.2.1. Orphans and Guardianship

Of the 650 learners who reported on this information, most out-of-school children who are attracted to the radio programs (72.3 percent) have both their parents alive, while 27.7 percent are orphans as indicated in Table 3. Fifty-eight children (8.9 percent) are double orphans, while 122 of them (18.8 percent) have only one living parent. At 27.7 percent, it is possible that orphans are underrepresented in this sample. In fact, most mentors claim from their personal knowledge of the children in their communities, that the majority of the learners in their centers are orphans, even though the adult guardians did not want to disclose that information about their protégés.

Table 1: Guardians of the learners by locality

Living Parents	All learners (%)	Urban areas (%)	Rural areas (%)
Both parents alive	72.3	68.0	76.7
Only mother alive	16.3	19.2	13.4
Only father alive	2.5	3.0	1.9
No living parent	8.9	9.8	8.1

There are more orphans in the urban areas (32.0 percent) compared to rural areas (23.3 percent). This is to be expected, particularly in the case of HIV/AIDS orphans who presumably should be found in higher numbers in the urban areas where there is a higher prevalence HIV/AIDS and HIV related deaths. The information in the next table indicates who the guardians of the learners are. 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.

Also, interviews with community members revealed that some communities were more diligent than others in emphasizing that the program was intended for orphans and most vulnerable children. In George compound for example, one community member reported that this was announced several times in the church before the launch as well as in door to door mobilization. However, the same person reported that many people in George compound are unemployed and struggling to put food on the table let alone pay fees or buy uniforms and other school materials. Obviously, they wanted to bring their children to this new “free” school because “everyone wants their child to get an education”. We also acknowledge that beyond the initial EBS sensitization campaigns, it was difficult to develop a specific plan for inclusion and follow up of the target group.

Table 2: Guardians of the learners by locality

Relationship to learners	All learners (%)	Urban areas (%)	Rural Areas (%)
Both parents	59.5	47.1	72.7
Mother	18.8	27.2	9.7
Other relatives	9.9	14.1	5.8
Grandparent(s)	5.7	4.7	6.7
Father	3.0	3.1	2.8
Brother or sister	2.8	2.8	2.8
No guardian	0.4	0.8	0.0
Total	100		

The majority of the learners live with their parents (59.5 percent). A significant number of learners live either with a grandparent or another relatives. In most cases, single parents¹, both mothers and fathers, act as primary guardians for their children. Where parents are alive, they take responsibility for

¹ Single here does not mean unmarried, but rather that the partner is deceased

the children rather than give them up to the care of relatives.

There are significant differences in guardianship in the urban and rural areas. In the rural areas, both parents tend to be the primary guardians, whereas there is more single guardianship in the urban areas. Also, there are more learners in the urban areas that are left in the guardianship of other relatives that there are in the rural areas.

2.2.3. Prior school attendance

19.3 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. Prior school attendance is however higher in urban areas (25.7%) than rural areas (12.6%) as the shortage for educational opportunities and facilities is higher in most rural communities. This finding partly explains why the rural communities have been more proactive in setting up centers for the IRI program.

2.3. Enrolment and attendance

Enrolment data was collected from 10 centers in Lusaka District, 3 of 8 centers in Chongwe, and the 2 Monze centers as part of the pre-launch activities, and in the baseline evaluation exercise. Data was also collected from 2 centers that are in the outskirts of Lusaka, Chilanga and Kafue districts. Attendance data was collected during the mid-pilot evaluation period. Instruments used for data collection on enrolment and attendances are listed as Appendices A and B.

2.3.1. Are learners coming? How many stayed?

A total of 1254 learners were registered at the 21 centers we tracked² at the beginning of the broadcasts. On average, there were 60 registered learners per class. The number of learners that were officially registered in the centers at the beginning of the program does not reflect the demand of the program because some of the children were turned away at registration. In some centers the numbers became too large for the one mentor who received training, while in others the center facility could not accommodate additional children. For instance, at the George learning center the EBS-trained mentor conducted training for second mentor and convened another group so as to accommodate additional learners. Even after this effort, a number of children were turned away. A mentor from George had this to say about requests for enrollment that he receives:

² There was a total of 27 centers with a total enrolment of approximately 1500 learners, but resources allowed us to track only a subset of centers

On a daily basis we receive parents wanting to enroll their children....We tell them that the program is almost half-way and that it would be very difficult for the children to catch up at the moment. Had it been when we had gone 20 lessons or so, we could have picked them on... So have advised them to come and see us at the end of the year...God willing, the programme will continue... (Mentor: George)

Similar incidents were reported from the Kamanga learning center where parents were always enquiring about the option to withdraw their children from community schools and send them to the learning center instead.

Table 4: Registration and Attendance

District	Centre	Registration at 7/24/2000	Attendance at 10/16/2000
Chongwe	Nang'ombe	85	83
	Nchute	49	10
	Mwachilele	66	34
Lusaka	Bauleni #1	49	45
	Bauleni #2	46	51
	Garden	56	36
	Kamanga # 1	100	104
	Kamanga #2	100	102
	Ngwerere	46	19
	George #1	98	47
	George #2	49	49
	Misisi	55	44
	Chainda	44	40
	Kanyama	94	
	Jack	53	40
	Chipata#1	44	45
	Chipata #2	44	45
Monze	Hanamaila	46	42
	Singwena	46	41
Kafue	Mapepe	49	35
Chilanga	Mimosa	35	23
Total	All centres	1254	935
Average	All centres	60	47 (78%)

According to information received from mentors and anecdotal evidence from EBS staff, some communities went ahead and opened centers on their own.

An example of such a learning center is the one run by Mr. Kelvin Chibalamuna in the Chongwe district (in a community next to Mwachilele). This center started operating a month later than the airing of the first program when community members realized that their children were missing out on a rare learning opportunity. In an encounter with the evaluator, Mr. Chibalamuna reported that he had enrolled 34 learners in his center made a request for a mentor's guide and any form of assistance that EBS could provide. Similar requests in the Chongwe district came from communities in Chanshya and Mataka villages.

About 20 percent of the learners have dropped out. Reasons for dropping out include deregistration of children who were under-aged at some centers, change of accommodation where families move to a different compound, relocation of children to rural areas to join their new guardians, and giving children daily responsibilities which make it impossible for them to attend the lessons. In some cases, older children who had been in government waiting lists had found places in government schools. New learners were filling some of the slots that were vacated by learners who dropped out.

2.3.2. Do learners regularly attend the daily broadcasts?

A spot check of overall attendance conducted on 17 of the 19 centers in mid-October 2000 showed that about 78% of the learners were still attending the radio broadcasts at the original centers. Average daily attendance was estimated from only a small sample of 85 learners whose complete attendance record was available to us when we visited the centers³. The Table below shows that 52.9% of the learners missed 5 days or less, while 8.2% attended for 20 days or less. The average attendance was 41 of the 49 days (about 84%) on which radio programs were aired.

Table 5: Attendance during the first 50 lessons

Attendance	Frequency	Percent
45 days or more	45	52.9
21 - 44 days	33	38.8
20 days or less	7	8.2
Total	85	100.0

Mentors reported an estimated daily attendance rate of at least 75 percent. Household chores while adults go to pursue various economic activities was reported to be the main reason for non-attendance. The household chores mainly

³ We made no appointments to visit centers but simply turned up when the broadcast began.

comprise of taking care of younger siblings, or going out to sell items such as cigarettes, peanuts and sweets. This reason was cited by each mentor during visits to the respective centers, and again during the focus group discussion.

A few centers encountered problems unique to their settings. For example, with an average of 19 of the 46 registered learners attending the radio broadcasts daily, the Ngwerere center in the outskirts of Lusaka city was experiencing problems that threatened the very existence of the program. There was a problem of communication, where community members did not want to contribute towards essential items such as batteries for the radio because they were under the impression that their children were receiving “free” education.

In Mimosa, a relatively small community of farm workers and their families in Chilanga district, there was a conflict between members of the community and a new NGO that was taking over the running of the farm at about the same time when the radio broadcasts were commencing. The IRI program came to be associated with the new farm management, and as a result of this conflict, community members withdrew their children from the radio program. Other attendance issues were caused by disruptions in changing the venue of the meetings as in Mapepe and Kamanga as well as malfunctioning equipment as was the case in a number of centers (Ngwerere, Mapepe, Garden, Mwachilele, etc.).

Attendance of the mentors is an important issue for sustainability of the individual learning center and to keep the momentum going. In one case the continued absence of a mentor contributed to a serious decline in attendance and, in some cases, attrition. Fortunately, this happened in only one center, where a mentor could not attend because of a bereavement in his family. It is not realistic to expect that mentors will attend every single broadcast since they have other responsibilities that they have to fulfill from time to time. It is therefore important to have a back-up person that can be called in when the mentor is not available. A number of centers (George, Kamanga, Misisi, and Bauleni) had two mentors who were either working simultaneously, or attending morning and afternoon broadcasts separately. This arrangement also served as a back-up mechanism in cases when one of the mentors could not attend the broadcast. In a few other centers (e.g. Mapepe and Mwachilele) the mentor was working with another individual who had the necessary preparation to facilitate when the need arose.

2.3.3. The role of the community in promoting attendance

During their focus group interview, most mentors reported that their centers were achieving their objective without a lot of difficulty. Most mentors reported that their communities were actively participating in learning center

activities. In the earlier days of the broadcasts, some communities held meetings where they agreed on the kind of support that they were going to provide for the learning center. In George, for example, there was a Kwacha amount contribution that every parent was expected to make towards the everyday running of the center, while other community members pledged to help by contribution items such as chalk, chalkboards pencils, and other learning equipment such as radios and batteries.

Community support was not forthcoming in some centers while others reported considerable setbacks as in the case of Mimosa and Ngwerere. In Ngwerere the broadcast was interrupted continuously for two weeks. The first interruption occurred because the mentor had a bereavement in his family and stayed away for a week. When the mentor came back in the second week broadcasts were not received because the radio had no batteries. The mentor reported that what happened in this case was that on several occasions learners would assemble for the broadcast, only to be turned away because they could not receive transmission. The plea to the community to assist the mentor with batteries fell on deaf ears. It seems that more community mobilization is needed to assist such centers. One strategy that has worked with communities is to set up a committee to assist mentor in the running of the center.

2. 4. What did they learn?

Pretest and posttest measures of achievement were administered to a sample of learners using a 20-item test achievement test and a grid for recording the responses. This section describes the rationale for test development and test administration. Results of the pretest and posttest are reported and compared.

2.4.1. Constructing and administering the assessment

The achievement test that was administered to the learners was developed from the national curriculum for Grade 1 for Mathematics, English, and Life Skills. The Zambian curriculum content and its learning objectives were used to develop a master plan for the 100 lessons developed. Each lesson specifies new vocabulary, numeracy skills, and life skills that go with the academic skills. A communicative language approach to teaching English was adopted, although scriptwriters who are more used to audiolingual methods still have some way to go to use the approach skilfully.

A mastery test was developed for the assessment. The guiding principle during test development was that assessment procedures should match the intentions of each learning target that was stipulated in the plan, hence students were given an opportunity to recall certain facts, as well as perform 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 to start

producing 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. The table below produces a summary of learning targets and tasks in the assessment instrument used to assess the skills.

Table 6: Test Items by Skill

Skill Area	Intended Learning Target	Test Items
Language	1. Simple comprehension of language	11, 14, 15, 16, 18, 20
	2. Production of language ⁴	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

The purpose of the test was to assess learners' numeracy skills, and whether they could understand simple communication in English as they were coming into the program. It was also designed to ascertain if learning was taking place, and to quantify the learning over a stipulated period of time. The test was derived from the instructional objectives introduced in the first 20 lessons. The 20-item test was developed by Dr Kathleen Letshabo, a measurement specialist, and reviewed by individuals with a thorough knowledge of the intended curriculum, the lesson content, and the way in which the radio lessons were structured and delivered. Thirteen items assessed language skills, while seven items assessed numeracy skills. Translation into local languages was allowed for the 7 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.

A pretest/posttest design was employed for the achievement testing component of the evaluation study. In this design an achievement test was to be administered to a random sample of learners prior to the onset of the radio broadcasts (see evaluation plan for description of sample), and again to the same examinees after 50 programs. The test was to be administered individually to each learner by the test developer with the assistance of the mentor, and trained test administrators in both cases. Even though the initial design and the ideal

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

situation would have been to administer the pretest before going on air with the lessons, it was administered during the second week of the radio broadcast (between lessons 6 and 8). This departure from the original plan did not distort the results of the evaluation study since learners had the opportunity to practice the newly acquired knowledge and skills only in later programs..

2.4.2. What learners knew before the broadcasts began

A significant number of learners performed well on numeracy skills. The majority could count up to 10 (Item 4 at 95.3 percent), while a good number were able to add and subtract numbers not more than 5 (Item 8 at 69.1 percent for addition and Item 9 at 57.6 for subtraction). Adding and subtraction was understood more at a concrete level (story problems) than at the abstract level. The Math skills that were not mastered by a simple majority of learners were recalling shapes and writing numbers (Items 10 and 17, respectively). The reason for this superior performance on numeracy skills can be explained by the reports of the mentors, that a considerable number of learners perform, as part of their daily activities, tasks that require them to do simple addition and subtraction, for example, making purchases at the market. On the whole, learners performed above expectation in the pretest on numeracy.

With about 75 percent of the learners being able to introduce themselves and exchange greetings in English (Items 1 and 2), these items were the easiest in the language test. Learners were also conversant with colors and could comprehend instructions such as “sit down”, “stand up”, “open the door”, etc., (more than 60 percent of the students could perform this task). The most difficult items were the use of possessives and writing letters, which were performed by only 13.1 percent of the learners. This was expected in that writing is a difficult skill for young children, and that possessives are generally difficult to grasp even with learners in higher grades. In fact, the mentors indicated in their interview that learners have not had enough opportunity to practice these skills.

2.4.3. Learning gains in mathematics and language skills after 50 programs

The posttest assessment was conducted after 50 lessons. 143 of the original 190 examinees were assessed.

Table 10: Gain score analysis by item and skill area

Skill Area	Items	Prescore Mean	Postscore Mean	Gain Score
Production of language	Item 1	80.8	95.8	15.0
	Item 2	80.5	97.6	17.0
	Item 12	28.4	69.2	40.8
	Item 13	20.5	22.4	1.9
	Item 19	57.9	71.7	13.8
Comprehension of language	Item 11	34.7	80.8	46.0
	Item 14	66.8	88.8	22.0
	Item 15	61.8	83.9	22.1
	Item 16	65.5	87.1	21.5
	Item 18	51.6	86.0	34.4
	Item 20	51.8	76.6	24.7
Writing	Item 6	64.7	86.4	21.6
	Item 17	26.6	61.5	35.0
Recall of names and shapes	Item 7	79.7	83.2	3.5
	Item 10	43.7	70.3	26.6
Counting	Item 3	98.7	100.0	1.3
	Item 4	96.3	100.0	3.7
	Item 5	76.8	93.4	16.5
Adding and subtracting	Item 8	70.8	92.0	21.2
	Item 9	60.5	86.0	25.5

The highest gains were in the area of comprehension of language where mean gains were between 21.5 percent and 46.0 percent. More learners could understand more language after 50 lessons than they could after 5 lessons, with as many as between 21 percent and 52 percent of the learners becoming masters of certain comprehension tasks. Mentors reported that these learning gains manifest themselves in the fact that they do not have to translate everything that the radio teacher says as they used to in the past.

They have learnt a lot because this time they can understand simple English from the radio. When the radio teachers says "children stand up" they will easily stand up; "children say this" ... they respond; "children count from 1 up to 10 ... children clap 3 times..." Any simple English, this time they have got it. (Mentor: Mapepe).

There are considerable gains in the production of language as well. Almost all children are able to introduce themselves and exchange greetings in English as shown in the mastery level and as mentors reported. However learners still need to practice simple language such as “this is”, and replying to enquiries using “yes” and “no”. In mastery learning, the target is that all children should acquire a core set of skills, hence 70 percent mastery falls below the mark. Also in language production, learners did not make significant gains in the use of possessives. In fact, a negative gain on mastery (albeit insignificant) was observed for the pretest to the posttest. This is not surprising, given that possessives are usually difficult to grasp for second language speakers even with older children. There seems to be enough evidence that teaching of possessives Grade 1 does not benefit the learners. Action to be taken to rectify this problem may be to remove the lesson on possessives from Grade 1 material, or to bring it in towards the end of the Grade 1 lessons. Mentors have indicated that there was inadequate opportunity to practice possessives in the lesson, a factor that needs to be rectified during revision of the Grade 1 lessons.

Table 11: Pretest/Posttest Mastery comparison

Skill Area	Items	Pretest Masters	Posttest Masters	Gain on Mastery
Production of language	Item 1	74.3	95.8	21.5
	Item 2	73.8	97.2	23.4
	Item 12	17.8	53.5	35.7
	Item 13	13.1	12.5	-0.6
	Item 19	53.4	66.7	13.3
Comprehension of language	Item 11	17.3	69.4	52.1
	Item 14	62.3	85.4	23.1
	Item 15	56.0	81.3	25.3
	Item 16	62.3	83.3	21.0
	Item 18	45.0	83.3	38.3
	Item 20	46.6	70.8	24.2
Writing	Item 6	44.5	75.7	31.2
	Item 17	17.3	47.2	29.9
Recall of names and shapes	Item 7	69.1	70.8	1.7
	Item 10	21.5	48.6	27.1
Counting	Item 3	98.4	99.3	0.9
	Item 4	95.3	97.2	1.9
	Item 5	66.5	86.1	19.6
Adding and subtracting	Item 8	69.1	86.1	17.0
	Item 9	57.6	81.3	23.7

Learners have made gains in writing, both in terms of writing numbers and writing letters (Item 6 and 17, respectively). However, masters in writing of letters are still a minority. Support for the accuracy of this finding comes from a comment that mentors made about one weakness of the radio lessons as spending time on “how to do” and a lack of emphasis on “doing”.

Our lessons put much emphasis on the theoretical part of it, not the practical part. What I mean is we can like... learn something, but we don't write it. From the beginning the kids were sort of bored ... in the beginning that led to the downfall of the number of children attending the lessons. ... (Mentor: Ngwerere)

Mentors were generally happy about the approach of the radio lessons, and learning gains that the children were making.

I think what is good about the whole program is the interaction that we've seen between the children and the radio teacher. When we first started the program we spent time explaining even the simplest language that was used. But now, we are saying that the children are able to respond directly from the instructions that the radio teacher is giving them... (Mentor: George)

All in all, I would say that children have learnt to be good listeners because they are able to pay attention to what has been said and they are able to carry out instructions ... they will do that on their own before a teacher comes in... except a few... (Mentor: Ngwerere)

The program was also credited with inculcating some positive values, evidence of which was not gathered in the assessment.

I think the program is working... cause there is that part where children are taught life survival skills... When something happens on the way, they do come to report to you the following day, telling you... “teacher, this kid did this which we learnt that...” For example, laughing at older people, which is bad. They do come to tell you, which mean the program is having an effect on the kids... (Mentor: Ngwerere).

Positive values, from the comments of the mentors, are lessons that children derive from the lifeskills segments delivered through Ambuya (the character that is an elderly man who always gives good advice and counsel to the children). It will be possible in the future when children have more language and better comprehension to give them a short task that assesses how they use lifeskills information.

2.5. Community expectations about the IRI program?

The IRI program, for most communities, came at a time when the number of children who do not have opportunities for schooling was increasing. For most parents, the program allows their children to learn essential skills in a short period of time each day, and still leave the bulk of the day for them to help with economic activities. It is also a low budget approach to education with a serious promise for delivery. It has demonstrated that children can learn knowledge and skills that are stipulated in the curriculum, and also enjoy the experience. One community member who had been listening to the programs put it this way:

I pray that God give these people doing this more wisdom ... to enable them to continue ...

These observations about the IRI program were gleaned from a number of interviews with community members, and from mentors' reports of the feedback that they are getting at their respective centers (see Appendix G and H for data collection instrument).

2.5.1. IRI as an alternative is there to stay

There is an expectation that the program will continue in 2001. At the beginning of the year when EBS staff was mobilizing parents to consider the IRI alternative, there was an overwhelming response from parents who could not afford to send their children elsewhere. Since this was only a pilot effort, parents who did not get a place for their children then were encouraged to organize themselves for the next phase when the program would be expanded. At some centers parents have been advised by mentors to come back at the end of the year to register their children for the new intake.

While parents could have wanted to enroll their children for the simple reason that IRI is a more affordable alternative, it had become clear during the mid-pilot assessment that parents are in possession of additional information, that IRI actually works.

I would say my center is very, very successful. Right from the onset I made it clear even to my friends that I wanted my center to be the best... (Mentor: George)

It also seems that parents are, out of necessity, embracing the alternative of an non-regimental "informal" school, where learners are allowed to participate even when they appear at the center barefoot and without uniforms. . Some communities that were not included in the pilot phase are planning to open new centers as has been reported at all places that were visited in the Chongwe district.

I've received feedback from people out there ... some people that have come to see what we are doing. Even some people have come to see how to go about it when starting a center... (Mentor: George)

There are organizational issues that need to be tackled if this expectation is to be fulfilled. Under the present arrangement, centers cannot go for too long without a visit from EBS staff. There needs to be more communication between EBS and the centers, particularly those in the rural areas. For instance, some pilot centers have not yet received the wind-up radios from the Chongwe district education office where they were deposited by EBS for easy access, and this has caused anxiety for the mentors who are affected.

2.5.2. Learning will continue to take place

There is an expectation that learning will continue to take place in the centers. Some mentors report that they have had parents who have come in to observe the lessons, and in all cases, they feel that the lessons are interesting, and that their children enjoy learning. Some see IRI as a strategy that may work for children who have had learning difficulties in the conventional schools and are considering withdrawing them from community schools and enroll them in the learning centers.

Though there are some conflicts in the community... one parent said... "I thank you very much because I had this child who was learning in a government school from Grade 1 to 4. He was doing nothing" When he came to my class ...now he is picking ... (Mentor: Mimosa)

Parents are anxious to see their children learn, so they cooperate with the mentors in most centers. The level of cooperation between mentors and parents was demonstrated on several occasions when mentors had to send classmates to bring some of the children who were absent during testing. In all cases, the children came to the center promptly.

2.5.3. IRI does not come at no expense to the parent

Because parents whose children are reached through IRI are generally poor, one of the factors that generated a lot of interest in IRI was the perception that it came at no expense to the parent. This perception has proved to be wrong in most cases. Parents do have to contribute either in cash or kind so that costs that are associated with sending children to the IRI learning centers are absorbed. All centers have to worry about having a reliable radio, a chalkboard, some chalk, and stationery for the learners, while a few others have to worry about toilets for the children.

Some communities are now comfortable with the idea of contributing towards the upkeep of the centre, while others are still trying to get used to the reality that education always comes at a cost to its beneficiaries. A center such as Ngwerere is on the verge of collapse because parents cannot appreciate that they need to help in making the program work. The mentor expressed the problem with the following words:

The community held a meeting when we were attending the workshop. They were told that they should bring their children for registration because the new school was coming, and that was a free school, free education. So that stuck in the peoples' minds. So now when Mrs Kampata came to educate the people on the importance of contributing something towards the running of the school, it became difficult for the people because the community leaders told them that the program was free, and Mrs Kampata, a foreigner came. It was difficult for them to be convinced that they should contribute something towards the well-being of their children... Mentor: Ngwerere

Positive experiences in terms of community ownership and participation in the centers should be shared with all centers in the next round of EBS mobilization meetings. Case studies should be conducted so as to document what seems to work well at the George and Kamanga centers for example. The myth that IRI can work without any contribution from the parents should be debunked, otherwise the program will not be sustainable in the long run. Another issue that has serious implications for sustainability of the program is the need to reward mentors for their time, efforts, and services that they render to the community. This issue needs to be tackled head-on at community level.

3. LESSONS AND RECOMMENDATIONS

3.1. Writing and production

The writers have worked seriously and have made huge progress. The dominant question in April 2000 was essentially: “Can we write 100 scripts?” They did, and did it very quickly. The scripts were unusable, but it was a confidence building accomplishment.

The dominant question in October 2000 has become: “What can I do in this segment to promote active learning, how does it relate to the other things that I am doing in this script, and to the other programs that also teach this topic?” The scripts have become more interesting and fun, learners are learning more effectively, and the writers are starting to understand why this is and how to achieve it. Writers have learned how to be more economical, to focus on the essence of writing to an objective. They have learned to edit themselves and each other. They are more critical of themselves and, in the daily team review of scripts, more critical of each other. They are more critical of each other because they now understand that student learning is not dependent on their own scripts alone but on those of the other team members because the effect on learning is cumulative.

They have learned how to draft lesson notes for the mentors’ guide, which, in turn, has reinforced for them the value of economy and simplicity in writing, of creating exciting ideas, of incorporating plenty of student activity, and of writing tightly to a small number of objectives. But it is in striving for these values that writers develop their craft, and it is why most writers (even ones who have inherent flair for language and ideas) take at least two years of practice and on-the-job training to become good scriptwriters as opposed to mechanically competent ones.

This project has not begun much differently from many other IRI projects. There is always a tension between producing high quality radio programs that teach effectively and training new people to write them. The major difference this time has been putting them on national airwaves from the beginning, which was a “high risk strategy” since a national listening audience heard both the new way for children to learn and the writing and production limitations of EBS staff learning on the job.

In 2001, we would suggest the following:

- revising all of the early programs and being very objective in reviewing all 100 Grade One programs to see which segments should be re-done;
- starting Grade Two early in February;

- constructing a much more detailed masterplan for Grade Two than was done for Grade One;
- giving much more thought to learning activities as a group before consigning the programs to individual writers;
- having an intensive workshop of perhaps one month in December/January to review Grade One scripts, to draft detailed notes for changes to Grade One scripts and/or segments of scripts, and to generate the 100-program masterplan for Grade Two. The product of the workshop would be detailed specifications that provided a much stronger basis for script development;
- pairing any new writers with the most skilled writers in the present cadre;
- capitalizing on individual strengths and interests and creating a team of “experts” from among the writers/producers in perhaps three areas: pedagogical, evaluation and production. EDC will work even more closely with these individuals to develop an institutionalized in-house quality control team at EBS, which is currently lacking and sorely needed.

Program production needs a lot of work. EBS needs to decide whether it wants to continue with the present pattern of writers producing their own programs or move to a system of differentiating between writers and producers. The problem with differentiation is that the best writers tend also to be the best producers. The overall system output could be improved if a good writer had the mandate to edit or even rewrite scripts and then produced all programs. But this might encourage sloppy writing since writers might come to rely on the single good writer/producer putting everything right. This was why EDC advisors largely refrained from rewriting scripts after a few of the early ones, and merely commented on scripts although sometimes at length. The single-minded focus of Cecilia and Alvaro on writing and production training made an enormous difference to the quality of both writing and production.

Alvaro Cisneros made some radical improvements in production quality, but the studios will never produce very sensitive or accurate programs until computers are installed and technicians are taught how to use the software.

For 2001 we suggest the following:

- reflection on how to staff the production tasks;
- technical assistance in production;
- further training for both producers and technicians;
- completion of the studios.

3.2. Program management

EBS is still re-discovering itself. It was a thriving institution up to the 1980s with a large staff and a regular production and broadcast schedule that filled the school day. Its purpose was one of enriching the classroom rather than direct instruction, and it worked in both television and radio. But by 1999, it had only two staff with radio production experience and no programming or air time for schools.

In 1999, the Controller brought in a group of teachers to learn how to be writers and producers. During 2000, they have begun to develop procedures for consultation, quality control and scheduling their writing, review and recording work. Basic systems (like how to label tapes, how to book a studio, studio etiquette) have been installed and are being used. On-site formative evaluation procedures have been developed. Others, such as writers being able to visit centers to evaluate their programs and talk to mentors, rarely happen due to a shortage of transport.

Some administrative systems, especially those concerned with contracting presenters and the payment of allowances need more clarity. The management of vehicles will come under greater pressure as the demand for coordination with other agencies increases, and needs reviewing.

The reorganization of the MoE offers an opportunity to review job titles and job descriptions and to update them in light of technology changes (many titles, for example, reflect a pre-computer age) and present needs. It is also an opportunity to identify training needs and to design training programs. We recommend the following:

- a review of all functions needed to permit EBS to write, produce and support the programs for out-of-school children, and a reconciliation of these functions with available staff;
- identification of staff positions (such as a monitoring and research position, and EBS outreach staff with responsibility for working with partners and centers in the provinces) that EBS will need to accomplish the program as it expands;
- development of job descriptions for all staff, and a review of the capacities of present staff to perform them;
- development of training programs for all EBS staff, including training in the use of the computers for all professional staff;
- development of internal management systems to meet the challenge of 2001 and beyond;
- identification of management training opportunities (in Zambia or outside) for senior EBS staff.

3.3. Administration of centers

The goal to produce effective learning programs is only half the battle. EBS only provides the means to learn but in order for the entire program to be a success, it is critical that each community provide more than a place for learners to meet and a radio and board. There must be a meaningful partnership between EBS and the communities. They must be actively involved in the administration of the centers. This requires diligence and commitment.

Perhaps the greatest strength in the vision we have of the IRI programs lies in the fact that centers are voluntarily initiated. While EBS worked hard in the early days of information dissemination and sensitization, it was still up to the communities to decide if they had a need and if they were prepared to organize themselves to support the effort to make education accessible to the out-of-school children and youth. In some communities, individuals acknowledged the need but were unable to get enough people committed enough to establish a center. While noting the challenges that various communities encountered during the pilot, we generally believe that communities that are willing to start and support a center in the first place can be assisted to manage their centers.

This type of assistance will most likely take different forms, depending on the partner organizations, the Directorate of Distance Education representatives, individual community groups, parents, geographical location, availability of resources, etc. Each community knows its capacities and limitations. The important thing is for communities to understand what their roles and responsibilities to the program are.

Each community will have issues unique to them. However, there will be some basic requirements in the effective administration of Taonga Learning Centers. We recommend that each NGO and community create a small support team of community members that will:

- identify a mentor and decide on some way to remunerate him/her;
- identify a back-up mentor (or helper)
- mobilize learners (taking care to identify orphans and the most vulnerable)
- provide a place for learners to meet;
- provide a radio and batteries (if required);
- provide a board and chalk;
- provide a safe place to store supplies and materials;
- assist mentor and children in collecting locally available learning materials;
- make frequent visits to the center, observe and assist mentors and children;

- visit parents and/or guardians to get their feedback on the program;
- provide feedback to EBS on issues concerning the programs;
- follow up with absentee learners; and
- develop a set of criteria on how to deal with learners who miss too many lessons, new learners who turn up in the middle of a grade level, fill in or replace mentors who are no longer able to participate, etc.

3.5. Recruitment of mentors

The radio alone won't teach effectively. The mentor is the link between the radio and the children. Because so much depends on the mentor's ability and attitude, he/she is both essential and influential. If the mentor creates a happy learning environment, the children will be positive and eager to learn. If the mentor is harsh or discouraging, the children will not learn. They may even stop attending. Hence, each community must pick a mentor carefully and wisely. Our vision of a mentor is one who will be diligent, committed and have a love for teaching and an interest in the children, who will make the children rush to the centers each day.

Most of the mentors who participated in the pilot were very impressive. While most were identified by members of their communities, a few initiated their centers, borrowing radios or selling fritters to buy batteries, offering their homes as centers, mobilizing learners and eventually capturing their community's interest and support. Most have been diligent with their work.

The main issue facing communities and the private sector agencies that recruit them is to realistically address the issue of retaining them. As volunteers, some will stick with the program. But unless communities recognize that they have to provide some realistic level of support in the form of food or other remuneration, the system will not be sustainable. We have seen already that the main threat to children learning is mentors not turning up.

We recommend that EBS and its partners develop a clear package that can present a realistic contract to communities that allows them to make a clearheaded decision whether to proceed or not.

3.5. Working with partners to go to scale

EBS makes radio programs. It has developed a capacity to train mentors, and has produced print materials for them. But it needs partners to reach out to communities and regularly to support the work of mentors. EBS has tried to provide this service during the pilot, but has felt its lack of staff most severely in this area. Relationships and coordination has been accomplished largely by the

Controller, Mrs Sinyangwe, assisted by a volunteer from a local agency, Mrs Kampata.

The experience of the pilot suggests that community involvement in management is critical. Where there was an unresolved argument over money between the mentor and the local leader, the mentor walked away and enrolment plummeted to 19 as two young women struggled to keep the center open. In contrast, the Kamanga center with a stable enrolment of 200+ children has very strong community leadership and has thrived. In Monze, the intervention of the local priest solved the problems that arose around the misuse of funds collected from the community to buy a radio.

Building on the experience of the pilot and translating it into a national system is the biggest challenge facing EBS. Initial conversations with the Peace Corps, Children In Need (CHIN), FAWEZA, the Catholic Secretariat, the priests working in Monze, CINDI, the Fountain of Hope orphanages and the Zambia Open Community Schools have been very encouraging. These partners have the infrastructure at the district and community level to identify centers and mentors and to support them on a regular basis and we expect that they will bring about 150 new Grade One classes in most provinces in 2001.

Memoranda of understanding with these partners are being drafted at the time of this writing. EBS will undertake to provide radio lessons everyday, mentors' guides and mentor training. The partners will mobilize communities that want to establish learning centers or community schools that wish to use the programs. Communities will provide mentors for training, a place to meet, a blackboard and radio, and will ensure that the mentor is motivated to stay the course. Partners will pay regular visits to the centers to ensure that they are working as planned, and will intervene when they are not.

This is what we envision as "controlled expansion". We also expect centers to identify themselves, which we are calling "spontaneous expansion". At this point we do not have a good idea how many such centers will spring up but they could be quite numerous. In the first year of expansion, EBS can probably provide a minimal level of support in Lusaka and Kitwe, where it has staff. During 2001, EBS will work with its Directorate of Distance partners in the Continuing Education division to see if it can make limited use of the staff in each of the 70 districts to provide support and supervision of centers not affiliated to any of the NGO partners.