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Short Discussion Paper

**The use of educational radio for improving the quality of teaching
and learning in government regional medium elementary schools**

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Introduction

The use of technology in children's education must be dictated by a clear vision of the educational aims we wish to fulfil. Likewise, the choice of a particular technology - be it television, radio, computers, or other - must be guided not merely by its availability or wide accessibility, but by the innate characteristics that make it appropriate for the educational goals, curricular objectives and pedagogical styles we want to promote on a large scale, in keeping with our National Curricular Framework.

Educational Radio

The use of radio for educational purposes began with the BBC's schools broadcasting services as far back as in 1924. The first school broadcast in India were commissioned in 1937, and regular broadcasts began in 1938 from All India Radio (AIR) in Bombay, Calcutta, Delhi and Madras. Subsequently, various educational radio projects over AIR have been carried out. The primary channels of AIR continue their school broadcasts, but by and large these have tended to be random, one-way information-communication programmes, or didactic and fairly dull lessons in which the teacher talks and students listen. They have not concerned themselves with the actual quality of classroom teaching and learning. Nor have they been held accountable for the achievement of specific learning objectives. This is largely the reason why radio fell into disrepute as an education technology.

There is no doubt, however, that amongst all the available means of communication, radio has the maximum reach in India, as in most developing countries. While television is rapidly expanding in urban and rural areas, access to radio networks and ownership of radios is far more widespread, as 97% of our population can access radio stations. Moreover, attempts were started globally in the early 1970s to apply major developments in applied learning theory, particularly active learning methods, to educational radio for schools, leading to the development of Interactive Radio Instruction (IRI).

IRI was used in several developing countries which had limited resources. (See Appendix 1 for a list of IRI projects in various countries). Unlike many distance learning strategies that are primarily designed to address access issues, IRI lays emphasis on the improvement of quality in the classroom teaching-learning process, towards achieving clear-cut learning objectives. It was this potential to improve quality on a large scale that attracted us at the Centre For Learning Resources (CLR) to study this alternative model of educational radio during the late 1990s and to adopt it. The CLR's pioneering interactive radio broadcasts started in the year 2000 over AIR in Maharashtra. From 2004 onwards, Education Development Centre (EDC) also started IRI projects in India, in various subject areas. (See Appendix 2 for a brief description of EDC's efforts and their substantial reach.)

Taking the CLR's decade-long experience in developing and delivering instruction through Interactive Radio, this paper delineates the following broad and conceptual aspects of radio use :

- Choice of radio for a given purpose, in a given context
- Potential for relevant content and pedagogy that can be exploited through IRI
- Important aspects of IRI lesson development
- Evaluation of impact
- Systemic advantages and limitations
- Sustainability

Choosing Radio

Distance learning technologies are useful in curricular areas where teachers' own knowledge is weak, where teacher-training levels are low, where textbook content is inappropriate, learning attainment poor, and large scale improvement in the quality of teaching and learning needs to be attempted. As the CLR's experience in teacher development for the teaching of English in regional medium schools confronted similar problems, we had to grapple with the question of how to significantly improve English teaching and learning in our government elementary schools in the present and in the immediate future.

Reminders that we were shortly to be in the 21st century prompted consideration of popular media such as television and computers. But in Maharashtra, we found these media to be unrealistic as most rural classrooms and many urban municipal classrooms lacked electrical outlets (National figure : only 30% of schools have outlets, leave alone outlets in classrooms). Electric supply was extremely erratic (as it continuous to be), with 5-6 hours of load-shedding per day in metro cities like Pune, and a massive 10-12 hours in rural areas, On the other hand, many schools already had radios, or could procure them inexpensively. Radios could operate on batteries, and compared to TV or computer maintenance, radio maintenance was far simpler and more accessible even in remote villages. Once developed systematically and creatively, the lessons could be beamed directly to thousands of children at relatively low costs. Moreover, in the case of radio, teachers did not have to learn how to operate a new technology. And Interactive Radio as a distance learning technology had a long, successful, and above all, well-researched history in countries with limited resources.

From 2000-2008, the CLR has developed and broadcast in various projects the following IRI programmes for Classes 5, 6 and 7 in Marathi and Hindi medium schools :

- '***We Learn English***'- a bilingual radio programme for teaching Spoken English in
Pune district : 2000-ongoing
Mumbai - 2002-05
Delhi - 2002-04
Jharkhand - 2004-06 (several districts)
Rajasthan - 2005-06 (2 districts)
Uttarakhand - 2004-06 (2 districts)
- '***Let's Read and Write English***' – a bilingual radio programme with accompanying reader-cum-activity book for students, in Pune district : 2005-2008.

Potential for wide-scale diffusion of relevant content and pedagogy

The pedagogy of IRI is more deliberate than active learning alone. Given here are some of the features unique to IRI that were used by the CLR to deliver relevant content and sound pedagogy on a large scale.

Reaching a well-designed curriculum for a given subject area, directly to elementary schools

Through IRI, we could deliver a complete curriculum, in the form of a course for English communication skills for Classes 5,6 and 7. A well-designed sequence of graded 15-minute lessons for each class, could be accessed by teachers and students at the press of a button 3 times a week. The radio course for spoken English consisted of about 80 lessons per year, per class, and there were 60 lessons per year, per class, for reading and writing.

Turning a limitation of radio to pedagogical advantage

Teachers and students are used to pages of a textbook that can be turned back for review as needed. Lessons on audio cassettes and CDs can also be played as often as desired, whereas a radio lesson is heard only once. This limitation calls for ensuring repetition and clarity within the instructional design and sequence – an opportunity for curriculum developers to build in frequent reviews, i.e. the important principle of “spiralling” necessary for effective learning, together with small amounts of continuous informal learning assessment and feedback for the classroom teachers.

Implementing interactive pedagogical processes

Teaching and learning through radio is interactive when students actually interact, during the radio lesson broadcast, with the radio teacher, the radio characters, their own classroom teacher, and with one another. During a typical 15-minute CLR radio lesson, students interact several times. They respond to question prompts through verbal and physical responses. Activities to be carried out in pairs or small groups are set up by the radio teacher. Short pauses in the broadcast give students enough time to think and respond.

For the CLR’s radio lessons for spoken English, this proves to be an ideal process to ensure that students in rural areas and urban ‘bastis’ regularly hear conversational English within a bilingual setting, and actually speak in English during the interactive broadcasts.

In the programme we later produced for reading and writing skills, the audio scripts and accompanying reader-cum-activity books focused on reading with *meaning*. The interactive and more constructivist methods we used in this programme stressed the importance of the personal response of learners to a given text, of using open-ended questioning techniques and accepting multiple correct answers.

Involving the classroom teacher as integral to the radio pedagogy and providing concurrent teacher development through radio lessons

In the structure of IRI lessons, the radio or distant teacher is the main teacher who directs the learning activities during timed pauses in each lesson. At the same time, facilitating each of these actual interactions is the role of the teacher present in the classroom. She/he provides individual attention during the lesson, and follow-up support after each lesson, which could include periods of further teaching according to the interactive methods modelled through the radio. Consequently, the distant teacher and classroom teacher are partners in the teaching process. Moreover, an ancillary outcome is that the daily radio contact time with classroom teachers serves as a subtle form of in-service training in the adoption of learner-centred, activity-based and constructivist teaching methods.

Engaging learners through relevant and lively content

IRI gives the opportunity to equate learning to real life. The setting of lessons within situations, dramas and stories that echo the real lives of children, and the use of believable radio characters engage student-listeners complete attention. Cultural relevance can be brought to content.

Secondly, radio has the advantage of being the “medium of the imagination”. Student-listeners cannot see, and therefore can imagine, a wide range of people, places and action-filled events on which the instructional episodes are based.

In the CLR’s bilingual radio programmes, stories, dialogue, songs – all important ingredients of language teaching – give opportunities to consciously weave in themes related to human values,

social awareness and gender sensitivity, so that besides learning English, student-listeners are involved in evaluating dilemmas, making judgements and expressing their own opinions using their first language.

Important aspects of IRI programme development

To develop effective instructional radio programmes, it was necessary to undertake the following :

- Audience research prior to scripting. In the CLR's case, we conducted focus group discussions with prospective student-listeners, to determine their interests and preoccupations, their preferences in story material, etc. We also assessed their current English communication and literacy skills, so as to correctly pitch the levels of our programming.
- A team approach in designing and scripting the programmes, involving curriculum experts, creative writers, teachers, teacher trainers, child and adult actors, and media persons.
- Rigorous trialling and formative evaluation during the development stage, to ascertain student interest, comfort of classroom teachers, clarity, levels and pacing of content, etc. Revising lessons accordingly.

Evaluation of impact

IRI has been evaluated intensively in several countries since its inception. The CLR has also carried out intensive action research with a base-line/end-line design, using both quantitative and qualitative evaluation techniques to assess the impact of each level of its radio programmes for Classes 5, 6 and 7. The cumulative impact of three consecutive years of CLR radio instruction has also been assessed.

The findings reveal that the radio programme "We Learn English" had a substantial impact on large numbers of urban and rural students studying in government schools, helping them to start speaking and expressing themselves in basic English. And this was possible despite the fact that their teachers themselves could not speak in English. Neither were these students – a large proportion coming from poor families – exposed to any English at all in their homes or in their neighbourhoods. Furthermore, improved oral ability indirectly influenced improvements in writing skills. The impact of the programme "Let's Read and Write English" was also very positive, though not as spectacular as the results of the programme for spoken English.

Systemic advantages and limitations

Besides improving the quality of teaching and learning, the strength of IRI lies in the following systemic advantages :

- Equity : There is standardization of quality in the programme for all students – in urban and even isolated rural areas.
- Access : Programmes can be accessed by formal elementary schools, other forms of learning centres, out-of-school children and youth, general "shadow" audiences.
- Cost-effectiveness : IRI is much less expensive than other options, as it can go to scale to reach lakhs of students and their teachers.

It is important to note that in the CLR's radio projects for teaching English, it was not classroom teachers' competence in subject matter but their professional commitment to students that determined the significant gains in learning. We estimate that due to the lack of accountability in the system, only about 30% of teachers turned on the radio regularly to access the broadcasts. About 20% were likely to have turned it on sporadically, and 50% rarely or not at all. Even then, at 30% of classrooms in Pune district alone, about 9,000 students per level – i.e. 27,000 altogether in Classes 5, 6 and 7 – listened to the programme regularly and benefited year after year. In other words,

though large numbers were indeed reached, the greater potential of access to quality teaching and learning through radio is entirely dependent on the accountability of teachers to press the radio button regularly.

Sustainability

IRI's global experience in sustainability reveals that where radio projects have been externally funded, only about half continue to be operational after funding ceases, and this in spite of unambiguous learning gains. Hence it is clear that improved quality of teaching and learning does not necessarily ensure sustainability of the radio pedagogy.

As is the case with all initially successful educational innovations within our state systems, sustainability of IRI programmes in India will ultimately be governed by structural, management, financial and political factors.

References

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2. Dock, A. and Helwig J. A review of Interactive Radio Instruction : Impact, Sustainability and Future Directions. The World Bank and Education Development Centre, 1999.
3. Education Development Centre (EDC). Overview of IRI Projects, 2006.
4. de Fossard, E. Writing for Interactive Radio Instruction. LearnTech Project, 1994.

Appendix 1

Countries Implementing IRI Projects Between 1974-1997

Country	Year begun	Project Title
Nicaragua	1974	Radio Math
Kenya	1980	Radio Language Arts (English)
Bolivia	1987	Radio Math
Bolivia	1992	Radio Health
Bolivia	1994	Early Childhood Dev.
Bolivia	1995	Early Childhood Dev.
Bolivia	1997	Maternal Child Care
Lesotho	1987	Let's Learn English
Dominican Republic	1981	Basic Education
Dominican Republic	1993	Mental Arithmetic
Dominican Republic	1993	Teacher Training
Dominican Republic	1997	English in Action
Costa Rica		English in Action
Costa Rica	1989	Environmental Education
Costa Rica	1991	Mental Arithmetic
Honduras	1987	Adult Basic Education
Papua New Guinea	1986	Science Education
Ecuador	1988	Radio Math Pilot
Ecuador	1997	Early Childhood Ed.

South Africa	1992	English in Action
South Africa	1995	Early Childhood Ed.
Cape Verde	1992	Radio Math
(PALOP countries)		Radio Math
Haiti	1995	Civics, Creole, Math
Guatemala	1990	Radio Math/Spanish
El Salvador	1992	Mental Arithmetic
	1996	Radio Spanish
Pakistan	1992	English in Action
		Radio Math
Thailand	1980	Radio Math
Venezuela	1991	Radio Math
Bangladesh	1994	English, Math
Indonesia Government	1993	Civics, Math , Teacher Tr.
Nepal	1996	Early Childhood Ed.
Nepal	1997	Rural Health Worker Tr.

Other IRI Projects

CLR Radio English, Centre For Learning Resources, Pune

[Basic Education Access and Management Support \(BEAMS\) Project–Technical Assistance in Innovative Technologies](#)

[Distance Education Inside and Beyond the Classroom in Haiti](#)

[dot-EDU \(Digital Opportunity through Technology and Communication Partnerships-Learning Systems\)](#)

[dot-EDU Southern Sudan Interactive Radio Instruction \(SSIRI\) Program](#)

[Guinea LINKS Program](#)

[HEAR Sudan](#)

[Honduras Interactive Radio Instruction \(IRI\) Based Pre-School Program](#)

[Interactive Radio Instruction for Somalis \(IRIS\)](#)

[Malawi Interactive Radio Instruction \(Tikwere!\)](#)

[Mali Teacher Training via Radio](#)

[PAGE \(Programme pour une Approche Globale de l'Education\)](#)

[Pakistan Education Sector Reform Assistance \(ESRA\) Program](#)

[Radio Instruction to Strengthen Education \(RISE\)](#)

[Sintonizados](#)

[Somali Interactive Radio Instruction Program \(SIRIP\)](#)

[Support Technology for Educators and Parents \(STEP\) in Madagascar](#)

[Technology Tools for Teaching and Training in India \(T4\), EDC.](#)

[Zambia Quality Education Services Through Technology \(QUESTT\) Project](#)

IRI Programmes developed by Education Development Centre (EDC) in India

- 2004 : “Chukke Chinna” in Kannada, for Science, Social studies and Mathematics.
- 2004-05 : “English is Fun” – presently being implemented state-wide in Karnataka, Madhya Pradesh, Chattisgarh, Jharkhand and Bihar.

Brief Note on EDC’s Radio Programmes

Technology Tools for Teaching and Training (T4) is a United States Agency for International Development (USAID) supported initiative implemented by Education Development Centre (EDC). T4 has several examples of delivery of digital content through Radio using Interactive Radio Instruction (IRI) and TV (Edusat) to reach lakhs of primary schools in several states (Karnataka, Chhattisgarh, Jharkhand, M.P., Bihar) in India in partnership with the state SSAs. The IRI programs have been developed and broadcast in the respective local language medium for all primary grades in Karnataka for all subjects (in topics that teachers found difficult to teach), in Chhattisgarh, Jharkhand, MP and Bihar for grades I and II for English language, and so on.... based on the needs identified by the states themselves. All radio programs are aired through the All India Radio network and this allows for a wide outreach. All these programs go through an intensive formative evaluation before they are aired. The initiative is also evaluated by external agencies each year for assessing the changes, both in teaching practice of teachers and learning levels of students.

The critical features of this initiative are:

- The teacher remains central to the teaching learning process and the radio/video/computer programs only support her.
- The programs are so designed that they encourage 'interactivity' and 'inclusion' in the classroom.
- The programs are designed, implemented, monitored and evaluated in consultation with the SSA (including teachers, BRC/CRC officials etc. - thus allowing for a mainstreaming measures, such as building the teachers' training into the regular SSA training, incorporating the broadcasts into the school time table and so on ...
- Insightful inputs of grassroots NGOs are elicited in formative evaluation of each radio program. There is intensive training of teachers and other education functionaries of the government