Education Radio Knowledge Pack

With a focus on low-resource settings

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Overview: What does the World Bank and its Global EdTech team do? How does this Knowledge Pack fit in?

Background

- World Bank’s goals
- World Bank Education Technology team’s vision
- World Bank’s 5 EdTech Principles
- World Bank’s EdTech Approach
- Overview of this Education Radio Knowledge Pack
What are the World Bank’s goals?

The World Bank Group has two goals:

To end extreme poverty and promote shared prosperity in a sustainable way.
What is the World Bank’s Education Technology team’s vision?

The World Bank’s Education Technology (EdTech) team’s vision is to:
Reimagine Human Connections to Transform Teaching and Learning for All
What are the World Bank’s 5 EdTech principles?

1. **ASK WHY:**
   EdTech policies and projects need to be developed with a clear purpose, strategy and vision of the desired educational change.

2. **DESIGN AND ACT AT SCALE FOR ALL:**
   The design of EdTech initiatives should be flexible and user-centered, with an emphasis on equity and inclusion, in order to realize scale and sustainability for all.

3. **EMPOWER TEACHERS:**
   Technology should enhance teacher engagement with students through improved access to content, data and networks, helping teachers better support student learning.

4. **ENGAGE THE ECOSYSTEM:**
   Education systems should take a whole-of-government and multi-stakeholder approach to engage a broad set of actors to support student learning.

5. **BE DATA DRIVEN:**
   Evidence-based decision making within cultures of learning and experimentation, enabled by EdTech, leads to more impactful, responsible and equitable uses of data.
What is the World Bank’s 5 EdTech approach?

To operationalize the 5 EdTech principles, the World Bank focuses on:

discovery, deployment and diffusion of new technologies.

**Discover**, document, generate and analyze evidence-based technology solutions in education relevant to developing countries.

**Deploy** solutions, at the pilot level and at scale, tackling adoption barriers (including in procurement) and in ways that are informed by evidence and which allow for efficient course correction.

**Diffuse** related knowledge widely across policy makers in our client countries and support capacity development to better use this new knowledge.
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Overview: Who is this Education Radio Knowledge Pack aimed at serving?

1. WHO?

- Audience & Purpose
- What is a Knowledge Pack?
WHO: Who is this Knowledge Pack aimed at serving?

Main Target Audience

World Bank staff (particularly, Task Team Leaders) and decision-makers beyond the World Bank who support education ministries on education technology.

Purpose

To support the main target audience as they work with education ministries to start [1] or enhance education radio programming as a remote learning tool, especially during COVID-19 and other emergencies.

What is a Knowledge Pack?

A series of short, pragmatic guides on individual topics within EdTech to support the target audience to make informed yet quick decisions about EdTech interventions in their work with education ministries.

[1] Note: To “start” Edu Radio, we assume that some basic radio production infrastructure is available to be leveraged for the short-term.
Overview: Why use Education Radio Programming?

2. WHY?

- Overview of problem (during COVID-19)
- What is Edu Radio?
- Delivery modes for Edu Radio lessons
- Uses of Edu Radio
- Advantages of Edu Radio
- Who, what & how long is Edu Radio most suited for?
- Evidence for effectiveness of Edu Radio
COVID-19 pandemic has left more than 1.1 billion children out of school, with more than 65% countries mandating partial or total school closures [1] [2].

With the length of school closures uncertain, countries are attempting to support learning of students out-of-school and in almost all cases, are turning to the use of educational technology (EdTech) to support remote learning. [3]

Middle- and high-income resource contexts in countries are deploying online learning systems (e.g. Learning Management Systems, Video Conferencing) with some also using broadcast media (e.g. television, radio, mobile phones) and print media as supplementary channels of delivery. However, online learning has exposed huge digital divides within and across countries. [4]

Low-resource contexts in Least Developed Countries (LDCs) and Fragile, Conflict and Violence (FCV) affected environments lacking the necessary connectivity and devices are deploying alternative EdTech tools such as educational radio, television, mobile phones supported by print material. [5]

What is Edu Radio? Types of Instruction

Audio Instruction

Education Radio Instruction (Edu Radio)

Interactive Audio Instruction (IAI)

Classical Radio Instruction

Interactive Radio Instruction (IRI)

Other types of Interactive Audio Instruction (IAI)

This is typically in lecture styled radio lessons thus usually used for older students or adult education. (e.g. Sierra Leone). Here, pedagogy and interactive learning is not the central focus. [3]

IRI is a distance education system that combines radio broadcasts with active learning to improve learning and teaching. IRI programs require teachers and students to react verbally and physically to exercises posed within lessons and to participate in group work, experiments, and other activities suggested by the radio program. [4] In an IRI lesson, learners engage in as many ways as possible to practice their new learning. They listen, play, sing, move, dance, answer questions, demonstrate skills to nearby listeners and evaluate each other’s skills. [4]

IAI lessons use the the same content and format as IRI lessons. The only difference is these can be used via different delivery modes other than radio, allowing for greater reach. For example, this audio content can be used via mobile phones (e.g. memory cards/podcasts), Interactive Voice Response (IVR), MP3 players/CDs or audio streaming/downloading.

See Types of Edu Radio lessons

Delivery/broadcast modes for Edu Radio content

Radio
- National Radio networks
- Independent Radio Networks (e.g. IRN in Sierra Leone)
- Community Radio Stations
- Shortwave & satellite radio [1]

Mobile Phones
- MP3 file shared via SMS, WhatsApp, Bluetooth, Memory card (e.g. SD card) can be played on phones (can attach speakers to amplify sound) (e.g. SMS - Rising Academies)

Interactive Voice Response (IVR)
- Callers can call a number to enter an IVR system run by Telecoms to listen to Radio lessons by navigating through menus. [2]

CDs/MP3 players
- Radio lessons can be distributed on CDs and as MP3 files via Memory cards and played via CD or MP3 players.

Audio streaming/downloading
- Audio downloading (hosted on a web page) or audio streaming (playing without downloading - e.g. YouTube, for those without storage space)

Podcasts
- Every new episode gets automatically delivered to the podcast app, upon subscription, without users having to access each new one through webpages.

Source: EDC | [1] Shortwave & satellite radio increases reach of FM based national radio networks; satellite radio is typically a subscription-based service. [2] IVR systems can be set up using 3rd party software to manage call-in flows and streamline message playback. Like radio they can be set up to be free to the user when the system is structured to reverse charges from the beginning.
Uses of Edu Radio

**Supports early childhood to adult education**
Has been used to deliver new content in low resource communities (e.g. DRC, Malawi, Nepal) as well as for youth & adult education (e.g. South Sudan) as well as for content revision, especially during emergencies.

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**Teaching & learning delivery model in emergency settings**
Has been used to deliver quality instruction during emergencies in low-income countries as well as fragile & conflict affected countries since 1970s (e.g. South Sudan, Mali, Nigeria, Malawi, Pakistan, Afghanistan).

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**Distance education for out-of-school children**
Can be used as a distance learning tool for children who cannot return to school and out-of-school children to ensure education continuity. (e.g. Honduras, Malawi, South Sudan, Tanzania, Zanzibar, Zambia).

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**Teacher support and training tool & certification mechanism**
Has been used as a teacher support tool to improve/deliver quality learning in formal & non-formal schooling (e.g. India, Liberia) and to facilitate teacher (and community facilitators) training as well as for teacher certification (e.g. Afghanistan, Mali, Pakistan).

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**Support for teacher shortages, including multi-grade classrooms**
Has been used in classrooms and for subjects with teacher shortages particularly in multi-grade classrooms (e.g. Costa Rica, Karnataka in India) and in local languages (e.g. Mali).

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**Supports health-based education for communities during crisis**
Has been used to deploy Public Safety Announcements (PSA) & government programs including health based best practises & support to caregivers and communities to support children (e.g. Liberia during Ebola).

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Source: [World Bank](https://www.worldbank.org)
Reach
In contrast to the Internet which can be expensive, inaccessible & complex to use; radio is mostly free, has high penetration rates globally (especially in areas with low internet connectivity) & easy to use. Other delivery modes like feature phones have higher penetration in low resource settings & CDs/MP3 players can be procured easily.

Scalable and cost-effective
Operating cost per learner & recurrent costs of delivering Edu Radio programs are low. Edu Radio programs have high capacity to scale once the initial investment in training of staff and production is made. [4]

Easily delivered in local languages
Easier than other modes of education delivery to be delivered in local languages. Can be used to equitably deliver education to minority groups in their mother tongues (particularly beneficial for early childhood education).

Positive Externalities
Engages a potentially large secondary audience during broadcasts, thus modelling what high-quality ECD sounds like. Also, has positive externalities for teachers by acting as an in-service teacher training & support tool (e.g. reminders to call on a girl child for a response).

Improved Learning Outcomes
Evaluations have yielded consistent & significant evidence that Edu Radio lessons can increase learning of children, sometimes even outperforming peers attending formal schooling. [1] [2] [3]

Engaging
IRI can engage listeners mentally, emotionally, and physically by engaging them in as many ways as possible to practice their learning. In contrast, for example, most Edu TV lessons engage learners visually requiring them to be still and glued to their screens.

Monitoring
When using mobile phone mode of distribution, programs with built in software can track usage on SD cards. SMS can be used to collect data on usage, retention of information, impact and user satisfaction. When using IVR, usage can be monitored through call logs.

Adaptable content
Edu Radio content is adaptable to different delivery modes. When using IVR delivery mode, content delivered can be personalised to the needs of the caller.

Who, what & how long is Edu Radio most suited for?

Who: Target Audience

IRI has been targeted to diverse populations of learners in different learning environments, including:

- Preschool children
- Caregivers of pre-school children
- Primary school students (during classroom-based instruction) [2]
- Secondary students
- School-age students who lack access to schools/during emergencies (e.g. Rwanda)
- Out-of-school youths (e.g. Zambia, South Sudan)
- Teachers (Training & in-classroom support tool)
- Adults (education)
- Populations that are vulnerable because of HIV/AIDS, refugee status, or other hardships (e.g. In South Sudan, it has been used to build capacity in a post conflict education system.)

What: Subjects

- Best suited for languages & Math according to evidence. But almost all basic primary subjects have been taught to children & adults using Radio.
- Typically, used for single subjects, but more recently, been used for multiple subjects together (e.g. Guinea: Math & French; Zambia: Math, Life skills, English; Haiti: Civics & Creole).
- Other subjects/areas include: Mathematics, Science, Health, Languages (e.g. English, French, Spanish, Portuguese), Reading, Environmental education, early childhood development (for teachers/communities).
- Mostly aligned to national curriculum for a subject & typically produced in coordination with education ministries. Where there is no national curriculum for a subject (e.g. environmental/health education), IRI curriculum may become part of the curriculum development process.

How long: Duration

- Typically, designed to cover the entire grade-level curriculum for a subject for the year (e.g. Nicaragua [4])
- Each lesson can range between 20/30/60 minutes to multiple hours.
- Broadcast anywhere between once/twice a day (daily) to few times per week (instead of daily) (e.g. Guinea, Haiti broadcasts lessons 3-4 a week).
- Few hours a week to multiple hours per week (e.g. Liberia: twice a week; Rwanda: 37 hours a week for primary students; 9-13 hours per week for secondary students)
- Practical considerations have dictated these variations.

Source: World Bank 2005 & EDC. [1] For a detailed breakdown of target audience (e.g. age groups, subjects, number of learners, etc.) for which Edu Radio has been deployed across the world, see pages 91-96 of this World Bank 2005 report. [4] For more details, see page 40-44 of this World Bank 2005 report. [2] “There is no evidence to suggest that IRI will not be as successful for the higher grades of primary school, although it may be necessary to provide a more extensive range of supporting print materials for those grades. Another consideration is that student ability levels in the higher grades are likely to vary more widely, which would require different programming strategies.” (World Bank 2005) [4] The daily, year-long, full curriculum coverage used in the first IRI series, in Nicaragua, was meant to inaugurate a break with traditional classroom use of radio as a backup element that supplemented conventional instruction only in a minor way.
Evidence for effectiveness of Edu Radio

**Key Takeaway:** There is consistent and significant evidence that IRI can increase learning across subject matter, age, gender, and rural or urban location. Students show progressively greater learning with time. Edu Radio/IRI has been used successfully across more than 35 countries. [1]

**Positive impact on students in schools**

Evidence shows that “Interactive Radio Instruction (IRI) had improved learning outcomes in conventional classrooms by between 10% and 20% when compared with control classrooms not using IRI” and can be used to deliver their core curriculum. [2]

**Positive impact on children of marginalised populations**

IRI has shown to bridge gaps in urban-rural achievement. (Limited) Evidence from fragile states demonstrated large effects on student learning outcomes in Math, English and local language literacy. [4]

**Positive impact on early childhood development**

IRI has a positive impact in the early stages of both physical and cognitive development. Results from Evidence from programs aimed at pre-primary learners find that they made progress in all assessed categories of holistic early childhood development. [3]

**Positive impact on children of marginalised populations**

IRI has shown to bridge gaps in urban-rural achievement. (Limited) Evidence from fragile states demonstrated large effects on student learning outcomes in Math, English and local language literacy. [4]

**Positive impact on teachers**

IRI used as for in-service professional development has shown improvements in teacher instructional practices in the short and long term. Teachers showed better understanding of pedagogical concepts & more often used active learning & student-centered techniques in lessons beyond Edu Radio lessons. Studies indicate that governments can successfully use IRI to strengthen teaching practices ahead of school re-openings. [5]

**Positive simultaneous impact on students and teachers**

Studies that look at the impact of IRI on students as well as on teachers (by modeling pedagogical techniques and behaviors) simultaneously find positive impact on both. However, teacher practices beyond the IRI instruction make a difference to the extent of learning of students. This shows that the role of IRI & teachers must be well defined & aligned with best practises to be effective. [6]

**Better results when facilitated by instructors & combined with activities**

Even though Edu Radio lessons can be self-directed, studies find that they are most effective when facilitated by a trained teacher or caregiver and when combined with interactivities. [7]
Overview: What is required to start Education Radio?

3. WHAT?

- Key Questions to ask
- Key Decisions to make
- Key Capacity elements required
- Role of Teachers
- Key Cost Elements
- Challenges
- Limitations

Click on any hyperlink to jump directly to the section.
Key Questions to ask for a quick start

1. **Lesson content**
   - Of the existing lesson series available aligned to grade levels and subject requirements, is the content at least partly aligned to current learning needs & standards?
   - Is the language of the lesson aligned to requirements?

2. **Lesson Facilitation**
   - Are the lessons reliant on facilitation from trained teachers?
   - Can the programs be facilitated with small groups of listeners?
   - 1. If schools are closed, can others be leveraged to facilitate lessons?
   - 2. How will they be trained to guide learners through lessons?

3. **Supplementary materials for lessons**
   - Can lessons be facilitated (at least partly) without supporting materials (e.g. textbooks, student workbooks, teacher guides)?

4. **Delivery/ broadcast modes**
   - Can lessons be broadcast/delivered through any of the possible Edu Radio delivery channels?
   - Are penetration rates of these delivery modes sufficient to reach the desired % of the target population?

5. **Public awareness of programming**
   - How will families & communities of listeners learn about the Edu Radio broadcasts? How will they be motivated to take advantage of them?

**See alternate options for**
- **Lesson content & Language revision**
- **Lesson Facilitation**
- **distributing supporting print material**

**Note:** This quick start is assuming existing Edu Radio content is being repurposed.

*Source: EDC, 2020 and World Bank, 2005*
Is Radio penetration greater than that of internet & devices OR is Radio accessible in areas where other broadcast modes are not?

Consider other remote learning tools.

Do you have ready education audio/radio lesson content for required grades & subjects?

Do you have the broadcast expertise for Edu Radio?

Leverage existing govt. broadcasting agencies & experts (faculty & students from Polytechnics) with Radio broadcast expertise & equipment (e.g. Rwanda).

Leverage Edu Radio expertise/train teachers [3] to:
- Assemble: curriculum, syllabus, textbooks, student learning objectives.
- Develop lesson sequencing aligned to curriculum.
- Develop Edu Radio lesson scripts.
- Align audio content to Edu Radio scripts.
- Develop Edu Radio schedules.

1. Leverage local / international providers to curate existing content. OR

1. Record Edu Radio lessons (in short cycles, e.g. 2-week cycles).
2. Enhance lessons (e.g. edit, add music, PSA [4]).
3. Test lessons with children/parents.

1. Establish support structures for listeners (e.g. helplines).
2. Establish feedback loops (e.g. helplines, SMS short codes).

Develop & deploy communication strategy.

Work with Radio stations (public & private) to broadcast Edu Radio lessons widely.

Start Edu Radio Broadcasting.

Establish medium/long term evaluation system to improve Edu Radio.

Enhance short-term Edu Radio (e.g. feedback, add more grades, subjects, Radio channels).

Click for a year-long sample timeline for Edu Radio

[1] This is a simplified version of a quick start decision tree. Different versions are possible. [2] [3] For a beyond-quick start, it is recommended to leverage technical expertise for program design and implementation. [4] PSA - Public Safety Announcements

Back to Section Overview
Key Capacity elements required

**Startup, Planning & Pre-Production**
- Personnel with expertise in...
- Material

- Edu Radio (technical program aspects)
- Edu Radio technology
- Age group specific curriculum (e.g. ECD, Primary, Secondary)
- Edu Radio Scriptwriting
- Existing Edu Radio lessons to be adapted (if being adapted)

**Production**
- Personnel with expertise in...
- Material

- Recording, editing, exporting programs (studio technician)
- Recording program & music (actors & musicians)
- Preparing program for distribution (studio technician)
- Procurement & logistics
- Technical equipment for Recording, Editing, Duplicating, Dispatching, Storing

**Distribution**
- Partnerships

- With Radio stations and/or other distribution channels (mobile phone, MP3, CDs, Memory cards, Website, YouTube, Podcast, etc.)

**Training & Monitoring**
- Personnel with expertise in...

- Training teachers on Edu Radio, Building community/public awareness, Monitoring implementation (Scriptwriters/Training team)
- Edu Radio technology

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Back to Section Overview
Many teacher trainings have been conducted entirely through Edu Radio programs while some complement in-service / pre-service teacher-trainings. They help teachers assimilate student-centered instructional practices into their own teaching (e.g. Nepal, Guinea, Nigeria, South Africa, Mali, Madagascar).

In-service teacher support

- Provides in-service teacher support and just-in-time guidance by building teacher skills (e.g. active teaching methods by guiding them through lessons). Enable teachers to play a more active role in a student-centered and interactive teaching & learning process in the classroom.
- Edu Radio lesson characters introduce and provide direction for games, exercises, and group work that are managed by the teachers. Teachers guide students through questions and answers, organize educational activities, and serve as role models through these lessons. Such lessons are most often paired with teacher guides for best results.

Provides support to low & high skilled teachers (including supporting teacher shortages)

- Low skilled teachers are set up to oversee students, reinforce participation & observe instructional modeling of Edu Radio lessons taking place.
- Skilled teachers work alongside lesson broadcasts to provide instant feedback, encouragement, & further support of lesson concepts to students during/after the lesson.
- Can provide support to substitute lesson facilitators (e.g. community volunteers, older students, home teachers) in cases of teacher shortages.

### Key Cost Elements

**Key Takeaway:** Estimates of costs for Edu Radio programs range between US $1.00 per student/year [1] to a few cents (>US $1) per child/year at a very large scale & using a broadcast medium [2].

<table>
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<th>Relativity of Costs</th>
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<td>- High fixed costs but recurring costs are low.</td>
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<td>- Initial costs are high for program development (e.g. planning, script writing, testing, production) but rebroadcast costs are minimal.</td>
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<td>- Annual per-student costs are substantially lower than those for other technologies.</td>
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<td>- Cost per teacher to use this as a teacher in-service training &amp; support tool is low.</td>
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<td>- Using ready programs is the cheapest. If edits to existing lessons are required, cutting is cheapest, followed by overdubbing and then by additions</td>
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<td>- Broadcast airtime is one of the biggest costs.</td>
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<td>- Benefits from economies of scale (but benefits accrue mostly to investment in program development rather than to payment of recurrent costs)</td>
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### Key Cost Elements [1]

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<tr>
<th>Cost to Institutions</th>
<th>Cost to Users</th>
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<td><strong>Starting Costs</strong></td>
<td><strong>Recurring Costs</strong></td>
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<tr>
<td>- Audience research/ program design</td>
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<td>- Lesson planning (Scope &amp; sequence; Overview planning) [3]</td>
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<tr>
<td>- Scriptwriting</td>
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<td>- Testing</td>
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<td>- Audio Production (e.g. recording of programs, music, editing - including altering existing programs, dubbing)</td>
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<td>- Developing education print material if needed (e.g. teacher guides)</td>
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<td>- Public awareness campaigns</td>
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<td>- Technical assistance</td>
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<tr>
<td>- Staff salaries</td>
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<td>- Teacher &amp; listener/home teachers training &amp; support</td>
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<tr>
<td>- Broadcasting airtime</td>
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<td>- On-going lessons planning [4]</td>
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<tr>
<td>- Lesson delivery devices &amp; supporting material (e.g. radio, mobile phones, memory cards, CDs, MP3 players, batteries, chargers)</td>
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<tr>
<td>- Printing of education material (if needed)</td>
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<tr>
<td>- Distribution (e.g. teacher guides, radios, batteries)</td>
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<tr>
<td>- IVR: Toll-free line (if IVR is funded by institutions)</td>
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<tr>
<td>- Electricity (solar power or crank-charged or battery charging)</td>
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<tr>
<td>- Cost of playback devices: Radio, MP3, CDs (if borne by users)</td>
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<tr>
<td>- IVR: Telecom use charge (if borne by users)</td>
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**Source:** [World Bank, 2005 & EDC 2015](#) | [Image Source: World Bank / EDC 2015](#) | [1] [IDR] [2] [EDC 2015] [3] [4] Lesson planning is not a recurring cost only if all lessons are developed at the start.

See [Annex](#) for example of cost breakdown across years.
Challenges

Key Takeaway: It is possible to plan around these challenges to some extent. Click on challenges to redirect to a part of this Knowledge Pack that can help with that challenge.

Student-based
• Lack of support & orientation on how to use Edu Radio lessons
• Lack of engagement during lessons
• Lack of reference print materials at home
• Speed of teacher delivery during lessons (too fast for students to understand)
• Limit on the duration during which students can actively learn from Edu Radio lessons

Family-based
• Lack of time to support children during home lessons
• Parental language barrier (compared to Edu Radio lesson language)
• Lack of support for home teachers to support learners

Home-based
• Lack of devices/supporting requirements (Radio, Mobile Phones, Batteries, Electricity)
• Energy challenges
• Inconvenient home environment for learning
• Poor radio signal (e.g. Rwanda)

Institution-based
• Mostly directed at poor, rural areas, even though learning gains have been found in urban areas as well (EDC, 2020). This implies if IRI were also used in wealthier, urban areas, it might get political buy-in to sustain. [1]
• Large scale IRI programs are not seen as ‘exciting’ enough to maintain political & donor support for continuity. [2]

Limitations

**Delivery mode-based**

- **Monitoring:** Difficult to monitor usage of programs used through radio, MP3 & CDs.

- **Audio Volume:** When using Edu Radio on mobile phones/IVR, reach & volume may be limited without speakers. (planning around this - recording can partially address these challenges).

- **Coverage:** For radio, coverage is limited to number of hours of broadcast that can be secured; limited by radio network coverage and availability of radios. For MP3/CDs, coverage is limited by device availability and electricity availability (for charging, if not for playback). For mobile phones, coverage is limited by device & electricity availability (for charging). For IVR, coverage is limited by mobile phone network coverage, device & electricity availability (for charging).

**Curriculum coverage**

- Based on delivery modes, covering entire curriculum is challenging (e.g. Sierra Leone faced this challenge). No data exists to indicate how much of the school curriculum can be effectively provided through IRI. These issues are largely decided on costs of developing programs, the amount of airtime that is available for broadcasting, and the number of radios required in each school to accommodate multi-subject, multi-grade broadcasting. [1]

**Cost of Broadcasting**

- Typically, Edu Radio programs use free government radio broadcasting or community radio stations. But, long-term guarantees of these arrangements are challenging to maintain. Privatisation of public radio stations increases operating costs steeply. (E.g. Sierra Leone used free broadcasting via Independent Radio Networks during Ebola but is unable to bear these costs during COVID-19 and has thus moved to community radio stations where only limited time slots are available for Edu lessons.)

Overview: How can Education Radio programming be implemented?

4. HOW?

- Stages of Edu Radio programming
- Types of Edu Radio lessons
- How can the impact of Edu Radio programming be maximised?
  - Strengthen student engagement during lessons
  - Complimentary multi-media approaches
  - Support for beneficiaries
  - Public awareness campaigns
  - Leverage stakeholders in the ecosystem

Click on hyperlinks to jump directly to the section.
Stages of Edu Radio program development (beyond short term)

**Preparation**
- Audience Research
- Analysis of the educational context to ensure the content is appropriate for the target audience and other factors (e.g. curriculum, policy).
- Assessment of technology options & production resources
- Development of program design document for each subject & grade level of instruction, including a scope & sequence of programs and program evaluation guidelines.

**Development**
- Scriptwriter training
- Scriptwriting, & initial episode production
- Formative evaluation that prepares for the final production of use-ready episodes & supporting material

**Production**
- Audio production of Edu Radio program (local production, if possible)
- Production of supplementary education material (if needed)

**Delivery**
- Teacher/ caregiver training for use of Edu Radio
- Community sensitization & mobilisation
- Delivery of Edu Radio lessons via one or more delivery modes
- Engaging listeners & Marketing Edu Radio lessons

(1) See what this looked like in the Democratic Republic of Congo. (2) For an example of this during COVID-19, click here. (3) For details on each phase, see click here.

### Types of Edu Radio lessons

#### Program Format

**Live Styled Lessons**
Lessons are pre-recorded & broadcast on radio as a live lesson. What makes this “live” is that the lesson cannot be paused. Being live, allows for live interaction as part of broadcasts. For instance, during the second half of broadcasts listeners can call and engage with facilitators on the content (e.g. Sierra Leone).

**On-demand lesson content**
Lessons are pre-recorded & accessible on demand through various delivery modes like IVR, memory cards or online mediums like podcasts or YouTube. Lessons used as “live-styled lessons” as well as ‘edutainment content’ can be used as on-demand lesson content as well.

**Edutainment content**
Lessons provide education in the form of entertainment and typically are rich with music, and engaging stories and characters (e.g. Akili Radio). Can be delivered as live-styled radio lessons or as on-demand content. Typically, produced by private providers (e.g. Rising Academy Network, Ubongo).

#### Curriculum Alignment

**Live Styled Lessons**
Lessons typically aim to deliver content aligned to curriculum but have also been used to broadcast drama-styled content and edutainment content.

**On-demand lesson content**
Lessons typically aim to deliver content aligned to curriculum but have also been used to broadcast drama-styled content and edutainment content.

**Edutainment content**
While some lessons are partly aligned to curriculum, most do not aim to deliver curriculum-based lessons. Instead, many, especially content for younger children, aim to build 21st century skills & mindsets in children. (E.g. Ubongo tries to align its radio content to national curriculums before sharing it with countries.)

#### Advantage

**Live Styled Lessons**
Edu Radio lesson broadcasts follow a schedule for broadcast and ensure a structure and continuity of lesson delivery for students (assuming families listen to all scheduled lessons). Call-in sessions allow for listeners to immediately engage on lesson content making them more engaging.

**On-demand lesson content**
Can be used as on-demand by teachers during in-classroom lessons (e.g. Cambodia) or distributed via ways other than radio like mobile phones, community loudspeakers (e.g. Peru, China), IVR, etc.

**Edutainment content**
Typically, extremely engaging content for children. Even if content is not intended to deliver curriculum-aligned content, edutainment content, especially ones aimed at young children, aims to build skills and mindsets (e.g. Akili Radio).

---

Strengthening student engagement during Edu Radio lessons

**Call in during lessons**
When using live radio broadcasts, design lessons to build in ample time (almost half) for listeners to call in & engage with the Radio presenter (e.g. Sierra Leone). Presenters can pose quiz questions during lessons based on the lesson topic for listeners to call in and share responses or invite listeners to call in for clarifications.

**Activities during lessons**
Build in plenty activities for students to engage in during lessons (e.g. singing, dancing, responding to questions, role playing, evaluate each other’s skills). Ensure plenty of student’s verbal repetition in responses.

**Characters & Storylines**
Use engaging storylines & characters to teach lessons (e.g. Akili Radio by Ubongo uses the main character Akili in all lessons; Nigeria). Ensure both female & male characters present lessons to ensure especially younger children relate to characters.

**Speaking pace of presenters**
Ensure radio presenter speaks slowly enough during lessons to ensure students can follow along comfortably, especially if the language of instruction is non-native to listeners (e.g. English) or topics are complex (e.g. Math, Chemistry).

**Auditory experience for listeners**
Enhance the auditory experience by building in music, jingles, catchy songs to teach lessons (e.g. days of the week song in Zambia, animal song in Somalia), sound effects (e.g. Madagascar), etc.

**Pauses during lessons**
Build in ample pauses during lessons for students to respond to questions & complete activities presented by radio presenters (e.g. Cambodia).

---

For strengthening student engagement using multi-media & material, click here.
Complimentary multi-media & other material to strengthen impact

**Key Takeaway:** Use a combination of different media & education material to strengthen impact of Edu Radio lessons (e.g. radio + print in Liberia)

### Mobile Phones
- Use mass messaging via SMS messaging, SMS short codes, WhatsApp, Call centre helpdesks to:
  - Train “home teachers” on supporting students with home lessons
  - Build awareness like, sharing schedules
  - Use SMS short codes to share Edu Radio updates
  - Share reminders/nudges with caregivers/students (e.g. Ubongo)
  - Collect Qs from students regarding lessons
  - Receive feedback
  - Conduct formative assessments
  - Provide technical, pedagogical & socio-emotional support

### Print
- If possible, use print material to:
  - As reference & supplementary material for lessons - student workbooks, textbooks, posters
  - Guide teachers using lessons in-classrooms - teacher guides
  - Guide “home teachers” to support children with lessons at home - teacher guides
  - Provide supplementary activities - newspaper supplements, postcards, worksheets/assignments (e.g. Argentina, Bangladesh, Spain) [5]
  - Reference for students to follow along - textbooks (e.g. Mexico)

### MP3 Players/ Memory Cards/ USBs / CDs/ Online Mediums [1]
- Deliver Edu Radio lessons via CDs/ MP3 format via memory cards/WhatsApp so lessons can be played as on-demand content
- Podcast apps/Websites [2] can be used for digital downloads of Edu Radio lessons requiring low bandwidth
- Use USB devices to distribute Radio lessons that can be plugged into TVs and viewed as on-demand content. (e.g. Ubongo)

### Study Material
- Use supporting educational study material during lessons (e.g. science lessons may need a ruler/magnet)

### Community Loudspeakers
- Use them to broadcast lessons; build awareness; sharing radio broadcast schedules verbally; share reminders/nudges (e.g. China, Peru)

Source: EDC, 2020 | [1] Work with Telcom companies to zero-rate/subsidise online platforms to ensure unfettered access for students. [2] Use a YouTube channel if country websites (EduTV/education ministry) cannot handle increased traffic.
Support for beneficiaries (students, parents/caregivers, educators)

Provide Technical & Pedagogical Support
- **Technical Support** - Use toll-free call centre helplines, WhatsApp numbers, email addresses, chatbots to provide technical support [1] to Edu Radio listeners (e.g., Turkey).
- **Pedagogical Support** – If possible, especially during emergencies, leverage teachers to provide pedagogical support using mobile phone (e.g., China). Provide support & subsidise teacher communication (calls, text messages, data).

Provide Socio-emotional Support
- **Why provide this?** Transition to education entirely through Radio is difficult for students & caregivers. Socio-emotional support will ease the transition.
- **How?** Provide multiple helplines to support parents (e.g., Jamaica has 36). Communicate directly with students, parents, teachers through SMS, videos, live stream chats, TV programs, etc. (e.g., Croatia, Spain). Turkey has a “Parent Hour” on TV to support caregivers.

Collect & Use Continuous Feedback
- **Pedagogical feedback** - To understand effectiveness, improve programming & increase uptake of Edu Radio, enable two-way communication, continuous feedback and insights from users (e.g., China, India, Pakistan, Russia)
- **Non-pedagogical feedback** – Collect data on the use data of Edu Radio lessons to understand & improve programming.

- Distribute low cost devices to those with no to access lessons like radios/MP3 player (e.g., Malawi).
- For home lessons, provide home teachers with guidance on how to support students during Edu Radio lessons, how to convert home space into classrooms, what learning material is needed for lessons.
- Share image-based, low-text instructions on how to facilitate interactions with media content. [3]
- Send schedules, nudges, activities via SMS/ WhatsApp/ community loudspeakers regarding Edu Radio lessons.

Public Awareness Campaigns

What

- Communication continuously & widely before as well during Radio lessons are being broadcast.
- Build public awareness & excitement about upcoming programming well BEFORE starting broadcasts through as many modes as possible.
- Share simple schedules for when, where & for whom (grade level, subject, language) lessons will be broadcast on radio.
- At this stage, if lessons are being accessed from home, recruiting & training “home teachers” should be a critical part of these communication campaigns.

How

- Ads via print like newspapers & hoardings (e.g. Brazil); TV or radio (e.g. Liberia); mass messaging & circulating short teaser videos via text messages or WhatsApp (e.g. Peru, Pakistan); updates via social media like Facebook (e.g. Rwanda), websites of education ministries (e.g. Belize).
- Announcements on loudspeakers in communities/local religious institutions (e.g. China, Pakistan, Peru)
- Work with ministers to share communication on social media to increase media coverage (e.g. Pakistan).
- Leverage schools & teachers to communicate locally with students & families.
- Even if broadcasting occurs on national radio stations, advertising should be broadcast on as many regional & community radio stations as possible for wider reach.

Key messages to reinforce while communicating with families [1]

- Daily broadcast times, channels & supporting resources (e.g. tips, how to access further schedules, helplines, lesson learning material, etc.)
- Children CAN & MUST continue their education despite the emergency.
- Radio is an effective mode of education continuity. Song & play during lessons mean children ARE learning.
- Programs are the government-endorsed alternative to in-person schooling.
- Ensure children listen daily (including protect them from distractions & freeing them from chores) & organise learning spaces & material (e.g. ruler, magnet) for lessons.
- They CAN & MUST facilitate these lessons with help from radio teachers & it is easy! They must participate in training for this before the programming begins.
- Encourage community members to use Edu Radio for their children as well.

Source: [1] EDC, 2020
Leverage stakeholders in the ecosystem to enhance Edu Radio programs

**Private sector** — To leverage existing education radio content as well as develop content for lessons; participate in development of lessons, especially lessons with student character voices.

**Teachers & Educators** — To support development of lessons; student engagement; assessments; feedback. (See ‘Role of Teachers’)

**Caregivers/Families** — To support student learning at home by acting as “home teachers” if needed; support students to listen to lessons regularly (free them from distraction & chores); provide feedback during market testing.

**Communities, Civil Society & Religious groups** — To support & motivate teachers, families & children to use Edu Radio lessons; to set up small listening groups; to distribute supporting print material (if needed).

**Students** — To ensure a consistent, dedicated listening population; get feedback during market testing of lessons; participate in development of lessons, especially lessons with student character voices.

**Government departments & agencies** — To coordinate different aspects of Edu Radio programming & support structures like listener helplines, ministry website & public awareness (e.g. district officials, teachers).

**Media regulatory authorities & Radio stations (public & private)** — To leverage reach of Radio networks to broadcast Edu Radio programs widely.

**Telecom operators** — To expand access to the Internet by subsidising/zero-rating educational online platforms, to set up short SMS codes & helplines to improve interactive elements of Edu Radio.
Overview: In this section, find additional resources.

5. Additional Resources

- Case Studies: [Overviews](#)
  - Ministry of Education, [Sierra Leone](#)
  - Rising On Air (Rising Academy Network)
  - Ministry of Education, [Rwanda](#)
- Sample [radio lessons, scripts & providers](#)
- [World Bank projects](#) with Education Radio components (during COVID-19)
- Where to [learn more](#) about Edu Radio?
- [Acknowledgements](#)
- [Annex](#)
Case Studies: Insights from across countries & providers

Ministry of Education, Sierra Leone

Rising Academies (Liberia, Gambia, Chad, Guinea, Sierra Leone)

Ministry of Education, Rwanda

Click on hyperlinks to jump to case studies overview.
Sample Radio lessons, scripts and providers

**Rising Academies (Rising On Air)**

*Rising Academies* is an organisation that recently started providing free to use pre-recorded Edu Radio content. **31 collaborators** have been using their work during COVID-19. They support other organisations to start Edu Radio lessons as well.

- **Services:** Audio content, adaptable lessons scripts; teacher tutorials on phone calls to students; phone call scripts; SMS scripts & plans (aimed at caregivers)
- **Languages:** English, French, Arabic
- **Grade Levels:** Early Childhood, Lower Primary, Upper Primary and Secondary
- **Subjects:** Literacy, Math
- **Experience with countries:** Sierra Leone, Liberia Gambia, Chad, Guinea
- **Target audience:** Students, Teachers (training), Parents

**Education Development Center (EDC)**

EDC has 30+ years of experience in Interactive Audio/Radio Instruction (IAI/IRI). A catalogue of programs maps each program to grade levels, subjects, languages and countries it has been used for.

- **Services:** Audio content & scripts (from government-approved IAI/IRI programmes) also on YouTube (e.g. Latin America); Teacher training (e.g. Liberia)
- **Languages:** 20+ (e.g. English, Spanish, French, Malagasy, Chichewa, Bamanankan, Songhai, Kinyarwanda, Kiswahili, Somali)
- **Grade levels:** Preschool to Grade 7
- **Subjects:** Language, literacy, Math, social studies, science, life skills (including socio emotional learning) including accelerated curricular alternatives
- **Experience with countries:** 20+ countries
- **Target audience:** Students, Teachers (training), Parents
## World Bank projects with Edu Radio components (during COVID-19) [1]

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<th>Key TTLs</th>
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<td>Girls Empowerment and Learning for All Project</td>
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<td>Peter Anthony Holland, Leandro Oliveira Costa</td>
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<td>Bangladesh</td>
<td>Bangladesh COVID 19 School Sector Response (GPE)</td>
<td>P174268</td>
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<td>P173282</td>
<td>Eunice Yaa Brimfah Ackwerh, Yoko Nagashima</td>
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<td>Project (MIQRA)</td>
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[1] Non-World Bank staff can also access these documents through [this external page](#) using the project codes above (e.g. P174026). These will be shared onto the external page once they are finalised.
Where to learn more about Edu Radio

Improving Educational Quality through Interactive Radio Instruction: A Toolkit for Policy Makers and Planners, World Bank, March 2005

Expanding Access to Early Childhood Development using Interactive Audio Instruction, World Bank/EDC, February 2015

Tuned In To Student Success: Assessing The Impact Of Interactive Radio Instruction for the Hardest-To-Reach, Education Development Center (EDC), February 2009

Rapid Evidence Review: Radio, EdTech Hub, June 2020
**Acknowledgements**

*Special acknowledgement and gratitude to the following people for supporting this work:*

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
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<tr>
<td>Himdat Iqbal Bayusuf</td>
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<td>George Cowell</td>
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<td>Rachel Christina</td>
<td>Education Development Center</td>
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</tbody>
</table>
Overview:  In this section, find even more additional resources.

6. Annex

- Case Study Overviews:
  - Sierra Leone
  - Rising On Air (Rising Academy Network)
  - Rwanda
- Radio Penetration Data: Part I and Part II
- Alternative Options:
  - Lesson Content & Language Revision
  - Lesson Facilitation
  - Distribution of supporting print material
- Sample Cost Distribution
- Sample year long timeline for implementation of an Education Radio intervention
Ministry of Education, Sierra Leone Case Study: Key highlights

**Lessons are focused on student engagement:** Each lesson is 1 hour long of which 30 minutes is lesson delivery and 30 minutes is for listeners to call in with questions and engage with the content.

**Lessons content aligned to student performance data:** Student performance data from previous years was examined to understand gaps in learning and Edu Radio lessons were aligned to these gaps.

**Teachers are leveraged to support teachers:** For example, teachers with experience during Ebola were leveraged to train and support newer teachers. Teachers delivered sample lessons to the entire group who observed and provided feedback to improve before recording Edu Radio lessons. Subject teachers lesson planned together to be able to support each other.

**Creative communication was used to build public awareness:** For example, community loudspeakers were also used. Where possible, people were tasked with going into communities to discuss Edu Radio lessons in-person by playing sample lessons. Where possible, volunteers distributing dry ration food to communities were tasked with sharing communication regarding programming.

**Learnings from experiences during Ebola improved Edu Radio:** For example, during Ebola, many girls became pregnant. As a response, life skills Edu Radio programs were deployed during COVID-19 to share gender-based messages for communities.

Click here to access the full case study on Sierra Leone.
Rising On Air Case Study, Africa: Key highlights

**Rising On Air’s free Edu Radio lessons can be used across the globe:** Their Edu Radio lessons are focused on literacy & numeracy across K-12 and are available for anyone across the globe to use. Lessons are based on general learning objectives across all grade levels & not specific to any one country’s curriculum so that users across the world can adapt them. Their radio scripts demarcate where they can be contextualised. Resources are available in French, Arabic and English.

**Mobile Phones are used to compliment the Edu radio lessons:**

(1) **SMS:** Behavioural nudges are sent via SMS to families covering a range of topics (e.g. public safety announcements, providing guidance to support children, reminders & schedules).

(2) **Hotline:** A customer care styled hotline has been set up to field queries from users regarding the Edu Radio programs.

**Teachers are leveraged to support regular check-ins with children:** Teachers of the Rising Academies schools have been leveraged to make phone calls to students to ensure education continuity & that students return to school. Phone call scripts lasting 6 - 10 minutes have been developed & teachers have been trained on using them. Phone calls cover a variety of topics (e.g. children well being by checking that children are safe given they are prone to domestic violence at home; troubleshooting to help them access Edu Radio lessons at home).

**Their teacher training has been adapted to be broadcast on Radio:** Rising On Air has been delivering its teacher training via 15minute Radio broadcasts. Scripts are freely available to anyone across the globe to use including education ministries.

**They support & convene other organisations:** Rising Academies has begun working with other organisations to share their expertise with Edu Radio to support others (e.g. MyAgro used expertise shared by Rising On Air to deploy radio lessons to 400K farmers in Mali). Additionally, they are currently collaborating with 30 partner organisations & have set up a Community of Practise slack channel for all organisations and individuals to collaborate on Edu Radio.

Click here to access the full case study on Rising Academies.
Ministry of Education, Rwanda Case Study: Key highlights

Leveraging stakeholders for quick deployment: Rwanda leveraged stakeholders to quickly deploy Edu Radio programming as a remote learning tool during COVID-19. These include Rwanda Broadcasting Agency, Rwanda Polytechnic faculty and students (specializing in radio production and broadcasting) and University of Rwanda (who has its own radio channel).

Leveraging parents to strengthen Edu Radio: Rwanda is leveraging development partners to collect feedback from parents on Edu Radio lessons broadcasts to strengthen Edu Radio lessons.

Provide parental guidance through Edu Radio: Beyond the short-term, the Rwanda Education Board aims to air instructional broadcasts directed at parents/caregivers to support their involvement in early stimulation, student learning routines and processes, as well as psycho-social wellbeing of children.

Enhancing Edu Radio by meticulously responding to feedback: Some of the feedback received from parents include - lack of engagement during lessons & lack of parental time to support. To this, Rwanda is responding as follows: developing interactive Edu radio lessons & adapting broadcasting schedules to suit parents.

Developing capacity to use in the long-term: Rwanda is working to sustain Edu Radio in the long-term by developing the government’s production capacity for programming to reduce costs; broadcast educational content for longer hours; for all grades; for all exam-based subjects; and for health & social campaigns.

Click here to access the full case study on Rwanda.
Only 5% (3 of 54) LDC and FCV countries have Internet penetration rates above 50%.


Proportion of LDC households with a radio and a TV, 2007-08 or latest available year [2]

Annex: Radio Penetration Data

Households with a radio by urban/rural location & household composition (%): 2019 or latest year available [1]

<table>
<thead>
<tr>
<th>Economy name</th>
<th>Latest year</th>
<th>All households</th>
<th>Rural households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All households</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Total</td>
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<td>32.6</td>
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<tr>
<td>Luxembourg</td>
<td>2018</td>
<td>76.4</td>
<td>77.5</td>
</tr>
<tr>
<td>Madagascar</td>
<td>2018</td>
<td>71.0</td>
<td>71.5</td>
</tr>
<tr>
<td>Malawi</td>
<td>2018</td>
<td>29.6</td>
<td></td>
</tr>
<tr>
<td>Maldives</td>
<td>2018</td>
<td>1.3</td>
<td>2.9</td>
</tr>
<tr>
<td>Mali</td>
<td>2018</td>
<td>12.9</td>
<td>5.8</td>
</tr>
<tr>
<td>Mauritania</td>
<td>2018</td>
<td>59.8</td>
<td>67.4</td>
</tr>
<tr>
<td>Mauritania</td>
<td>2018</td>
<td>61.5</td>
<td>67.4</td>
</tr>
<tr>
<td>Montenegro</td>
<td>2018</td>
<td>69.6</td>
<td>69.0</td>
</tr>
<tr>
<td>Morocco</td>
<td>2017</td>
<td>63.0</td>
<td>63.0</td>
</tr>
<tr>
<td>Mozambique</td>
<td>2017</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Namibia</td>
<td>2019</td>
<td>67.8</td>
<td>69.5</td>
</tr>
<tr>
<td>Nepal</td>
<td>2018</td>
<td>0.0</td>
<td>2.2</td>
</tr>
<tr>
<td>Netherland</td>
<td>2018</td>
<td>18.2</td>
<td></td>
</tr>
<tr>
<td>Niger</td>
<td>2018</td>
<td>79.5</td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>2018</td>
<td>26.8</td>
<td>19.3</td>
</tr>
</tbody>
</table>

Annex: Alternate options for adapting Edu Radio Lesson Content & Language

**Lesson Content Revision**

<table>
<thead>
<tr>
<th>If content revision includes...</th>
<th>Instead try...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incremental &amp; academic upgrades</td>
<td>No program alterations</td>
</tr>
<tr>
<td>Revision of incorrect terminology &amp; references</td>
<td>Overdub unwanted sections</td>
</tr>
<tr>
<td>Upgraded ideas &amp; methodology</td>
<td>Selectively cut parts of program</td>
</tr>
<tr>
<td>Critical new methodology &amp; approaches</td>
<td>Re-record entirely new segments</td>
</tr>
</tbody>
</table>

**Language Revision**

<table>
<thead>
<tr>
<th>If...</th>
<th>Instead try...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incremental &amp; academic upgrades</td>
<td>No program alterations</td>
</tr>
<tr>
<td>Revision of incorrect terminology &amp; references</td>
<td>Overdub unwanted sections</td>
</tr>
</tbody>
</table>

See this EDC 2020 report for more details.

Source: EDC 2020
## Annex: Alternate options for Lesson Facilitation

<table>
<thead>
<tr>
<th>If...</th>
<th>Instead try...</th>
</tr>
</thead>
</table>
| Schools are not yet open but small groups of learners can be gathered | • Advise caregivers to gather small numbers of learners.  
• Contact civil society actors, such as community radio stations, local NGOs & religious leaders, and task them to support communities to set up small learning groups |
| Listeners cannot be gathered to do lessons activities in pairs & small groups | Ask parents, caregivers, relatives, older siblings to role-play as “home classmates”. Conduct lessons in groups of 2 if peers are required for lessons (all IRI/IAI lessons). |
| Blackboards are not available | Suggest “home blackboards” to families i.e. other surfaces to write on like flipcharts stuck to the wall; flattened cardboard boxes; whiteboard markers used on smooth, white surfaces in the house like tiles or the fridge surface; sand/mud which can be written on with a stick |
| Listeners cannot enjoy a quiet listening environment free from distraction | Ask caregivers to:  
• Select a space as quiet as possible, minimise interruptions & ensure children remain focused (e.g. from siblings, neighbors, animals)  
• Release children from chores during this time & ensure the child attends lessons as often as it is broadcast |
| Trained teachers are not available to facilitate lessons | Leverage & train parents, caregivers, older siblings, other family or community members to role-play as the “home teachers”. In this case, ensure home teachers are trained adequately before lessons begin. This is critical to success of Edu Radio lessons. |

Interactive Edu Radio lessons can be used in groups of 2.

Source: [EDC 2020](#)  | Image Source: Mickey Wiswedel, [Stocksy](#)
### Annex: Alternate options for distributing supporting print material for lessons

<table>
<thead>
<tr>
<th>If...</th>
<th>Instead try...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery of student workbooks is not possible at all</td>
<td>• Add disclaimer to lessons about this “missing” material (so listeners are not befuddled by this)</td>
</tr>
<tr>
<td></td>
<td>• Cut out the parts that are material dependent (be careful that this does not impact the learning objectives)</td>
</tr>
<tr>
<td>Governments cannot deliver supporting print material</td>
<td>Enlist NGOs &amp; civil society</td>
</tr>
<tr>
<td>Door-to-door delivery is not possible</td>
<td>Enlist NGOs &amp; civil society Delivering to local businesses/government offices that remain open &amp; broadcast directions to families on how to collect them.</td>
</tr>
<tr>
<td>Normal delivery channels are not working</td>
<td>Look for private transport systems such as local bus companies, or approach companies such as mobile carriers/bottling companies &amp; negotiate a public-private partnership agreement to piggyback on the means they use to disseminate scratch cards &amp; drinks.</td>
</tr>
<tr>
<td>Book binding costs are high, or print-run timelines are long</td>
<td>Investigate possibility of publishing regular low-cost inserts in local newspapers.</td>
</tr>
<tr>
<td>Internet accessibility &amp; cost are not prohibitive</td>
<td>Digitise supporting student workbooks &amp; teacher guides to make them available for download.</td>
</tr>
<tr>
<td>Downloading is not possible but receiving texts is free</td>
<td>Set up a text-based distribution system. Participants can enroll in a short SMS code system &amp; receive a daily text back that prepares them for the upcoming broadcast. They can then transcribe their incoming texts as needed onto their “blackboard” or into learner’s books.</td>
</tr>
</tbody>
</table>

If print material is not available, add disclaimers before lessons to warn about missing material.

See this EDC 2020 report for more details. | Source: **EDC 2020** | Image Source: **World Bank/EDC** | Back to Key Questions
## Annex: Sample cost distribution across years

### Distribution of Costs in an IRI Project in Africa (percent)

<table>
<thead>
<tr>
<th>Cost item</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Percentage of total costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Investment costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Curriculum and scripts</td>
<td>4.4</td>
<td>5.7</td>
<td>5.9</td>
<td>5.1</td>
<td>21.2</td>
</tr>
<tr>
<td>Radio program production</td>
<td>1.6</td>
<td>1.9</td>
<td>2.0</td>
<td>1.2</td>
<td>6.7</td>
</tr>
<tr>
<td>Preparation of printed materials</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>0.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Start-up costs, including upfront training</td>
<td>8.5</td>
<td>6.9</td>
<td>6.9</td>
<td>7.0</td>
<td>29.3</td>
</tr>
<tr>
<td>Investment cost as percentage of total four-year budget</td>
<td>15.3</td>
<td>15.3</td>
<td>15.8</td>
<td>14.2</td>
<td>60.5</td>
</tr>
<tr>
<td><strong>Recurrent costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air time, other broadcasting</td>
<td>0.0</td>
<td>0.7</td>
<td>1.7</td>
<td>0.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Radios (three-year life)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
</tr>
<tr>
<td>Production of printed materials and cassettes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.7</td>
</tr>
<tr>
<td>Distribution of materials</td>
<td>0.0</td>
<td>1.3</td>
<td>1.4</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Training/training supplies</td>
<td>0.1</td>
<td>1.3</td>
<td>1.3</td>
<td>0.1</td>
<td>2.7</td>
</tr>
<tr>
<td>Continuing program development</td>
<td>0.0</td>
<td>1.2</td>
<td>3.1</td>
<td>2.4</td>
<td>6.7</td>
</tr>
<tr>
<td>Administrative expense</td>
<td>4.8</td>
<td>6.3</td>
<td>5.7</td>
<td>6.0</td>
<td>22.8</td>
</tr>
<tr>
<td>Other fixed expense</td>
<td>2.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
</tr>
<tr>
<td>Recurrent cost as percentage of total four-year budget</td>
<td>6.9</td>
<td>10.8</td>
<td>13.3</td>
<td>8.5</td>
<td>39.5</td>
</tr>
<tr>
<td><strong>Total project cost per year</strong></td>
<td>22.2</td>
<td>26.2</td>
<td>29.0</td>
<td>22.6</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: p.65, World Bank, 2005
## Annex: Sample year long timeline for Edu Radio (1/3)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Person responsible</th>
<th>Target</th>
<th>M 1</th>
<th>M 2</th>
<th>M 3</th>
<th>M 4</th>
<th>M 5</th>
<th>M 6</th>
<th>M 7</th>
<th>M 8</th>
<th>M 9</th>
<th>M 10</th>
<th>M 11</th>
<th>M 12</th>
<th>Product/Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audience and context research conducted</td>
<td>STTA* and ministry counterparts</td>
<td>Preschool teachers and students</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Audience and context research conducted and data aggregated</td>
</tr>
<tr>
<td>Conduct local technology scan</td>
<td>Local consultant with STTA</td>
<td>Local markets</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Technology scan data collected and aggregated</td>
</tr>
<tr>
<td>Design document developed</td>
<td>STTA with local counterparts</td>
<td>Program managers and staff</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Design document developed</td>
</tr>
<tr>
<td>Training of scriptwriters on how to write an IAI lesson (2 weeks, plus refresher after 2 months)</td>
<td>STTA</td>
<td>12 Scriptwriters</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Scriptwriters trained</td>
</tr>
<tr>
<td>Training of technicians on how to build an IAI lesson</td>
<td>STTA</td>
<td>2 Studio technicians</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Technicians trained</td>
</tr>
<tr>
<td>Selection of the series title and series design (characters, scenes, main objectives, template for each lesson)</td>
<td>Ministry validation committee and scriptwriters</td>
<td>Preschool teachers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Title selected and production document finalized</td>
</tr>
<tr>
<td>Development of teachers guide page and script templates</td>
<td>Scriptwriters</td>
<td>Preschool teachers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Layout of teacher guide finalized. Template for script finalized</td>
</tr>
<tr>
<td>Creation of the introduction song for the series</td>
<td>Musicians</td>
<td>Preschool teachers and students</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>The song is produced</td>
</tr>
<tr>
<td>Identification of actors for each series character</td>
<td>Scriptwriters and technicians</td>
<td>Actors</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Actors hired</td>
</tr>
<tr>
<td>Scope and sequence for 100 lessons are mapped</td>
<td>STTA and scriptwriters</td>
<td>Scriptwriters</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Scope and sequence finalized</td>
</tr>
<tr>
<td>Scope and sequence for 100 lessons are validated</td>
<td>Ministry validation committee</td>
<td>Preschool teachers</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Scope and sequence validated</td>
</tr>
<tr>
<td>Production Plan for 100 lessons prepared</td>
<td>STTA and scriptwriters</td>
<td>Scriptwriters and studio technicians</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Production plan finalized</td>
</tr>
</tbody>
</table>

## Annex: Sample year long timeline for Edu Radio (2/3)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Person responsible</th>
<th>Target</th>
<th>M 1</th>
<th>M 2</th>
<th>M 3</th>
<th>M 4</th>
<th>M 5</th>
<th>M 6</th>
<th>M 7</th>
<th>M 8</th>
<th>M 9</th>
<th>M 10</th>
<th>M 11</th>
<th>M 12</th>
<th>Product/Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technology for distribution identified and procured.</strong></td>
<td>Procurement officer</td>
<td>Preschool teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Technology ready for use</td>
</tr>
<tr>
<td><strong>Master plans drafted for each lesson (10 at a time written)</strong></td>
<td>STTA and scriptwriters</td>
<td>Scriptwriters</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>Master plans completed</td>
</tr>
<tr>
<td><strong>Scripts drafted, reviewed and timed (5/week written)</strong></td>
<td>STTA and scriptwriters</td>
<td>Scriptwriters</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>Pre-test scripts completed</td>
</tr>
<tr>
<td><strong>Recording of pre-test scripts (5/week recorded)</strong></td>
<td>Studio technician in collaboration with actors and scriptwriters/testing team</td>
<td>Scriptwriters and/or team responsible for testing</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>Pre-test programs are available for testing</td>
</tr>
<tr>
<td><strong>Testing of pre-test programs in local school and subsequent modifications to programs and teachers guide pages integrated (10 tested/wk)</strong></td>
<td>STTA, Scriptwriters and/or team responsible for testing</td>
<td>Scriptwriters and/or team responsible for testing</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>Modifications to pre-test programs and teacher guide pages made</td>
</tr>
<tr>
<td><strong>Scriptwriters and community sensitization team trained on mobilization/sensitization</strong></td>
<td>STTA, scriptwriters and training team</td>
<td>Scriptwriters and/or team responsible for training</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>Sensitization team trained</td>
</tr>
<tr>
<td><strong>IAI and community sensitization materials drafted and recorded and finalized</strong></td>
<td>STTA, Scriptwriters and/or team responsible for training</td>
<td>Scriptwriters and/or team responsible for training</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>IAI community sensitization materials drafted and recorded and finalized</td>
</tr>
<tr>
<td><strong>Studio technicians record modifications to pre-test programs in studio</strong></td>
<td>Studio technician in collaboration with actors and scriptwriters/testing team</td>
<td>Scriptwriters and/or team responsible for testing</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>Post-test programs available</td>
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</tbody>
</table>

Source: [World Bank/EDC 2015](#)
<table>
<thead>
<tr>
<th>Activity</th>
<th>Person responsible</th>
<th>Target</th>
<th>M 1</th>
<th>M 2</th>
<th>M 3</th>
<th>M 4</th>
<th>M 5</th>
<th>M 6</th>
<th>M 7</th>
<th>M 8</th>
<th>M 9</th>
<th>M 10</th>
<th>M 11</th>
<th>M 12</th>
<th>Product/Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community sensitization process initiated</td>
<td>Scriptwriters and/or team responsible for training</td>
<td>Community members</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Community sensitization process under way</td>
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<tr>
<td>Community preschool facilitators identified and community support</td>
<td>Training team</td>
<td>Community members/teachers</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Community facilitators identified/ resources leveraged</td>
</tr>
<tr>
<td>resources mobilized</td>
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</tr>
<tr>
<td>Final quality control to verify modifications and programs have no</td>
<td>Scriptwriters/testing team</td>
<td>Preschool teachers and students</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<td>✓</td>
<td>Final versions are available in digital format</td>
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<tr>
<td>issues</td>
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<tr>
<td>Recordings are built into bundling format for phones</td>
<td>Studio technician/programmer</td>
<td>Preschool teachers and students</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Lessons are available to load onto mobile phones</td>
<td></td>
</tr>
<tr>
<td>IAI teacher training materials drafted and recorded and finalized</td>
<td>STTA, Scriptwriters and/or team responsible for training</td>
<td>Scriptwriters and/or team</td>
<td>✓</td>
<td>✓</td>
<td></td>
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<td>✓</td>
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<td>IAI teacher training materials drafted and recorded and finalized</td>
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<tr>
<td></td>
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<td>responsible for training</td>
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<tr>
<td>Teachers guide printed</td>
<td>Procurement officer</td>
<td>Preschool teachers and students</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Teachers guides available for distribution</td>
<td></td>
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<tr>
<td>Lessons and teachers guides distributed</td>
<td>Logistics officer</td>
<td>Preschool teachers and students</td>
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<td></td>
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<td></td>
<td></td>
<td>✓</td>
<td></td>
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<td>Lessons and teachers guides distributed for use</td>
</tr>
<tr>
<td>Conduct initial IAI training with preschool teachers</td>
<td>STTA, Scriptwriters and/or team responsible for training</td>
<td>Preschool teachers</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td>Initial teacher training completed</td>
</tr>
</tbody>
</table>

Connect with World Bank’s EdTech team

Twitter

World Bank EdTech webpage and resources

Medium Posts (Weekly/Monthly mailers)

Blogs

Podcast: Apple Podcasts | Spotify | Anchor

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- **External**: szacharia@worldbank.org | iciarrusta@worldbank.org