Nigeria Reading Access and Research Activity (RARA)

Development of Teaching and Learning Materials for Early Grade Reading Instruction

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About Nigeria RARA

- Nigeria RARA, an EdData II Task Order funded by the US Agency for International Development (USAID), was implemented from February 2014 to December 2015. (All project-related documents can be found at: www.eddataglobal.org. Select “Nigeria” from the country tab to browse.)
- The objective of the project was to identify factors that improve reading skills and increase access to schooling for out-of-school children in northern Nigeria.
- RARA assisted the Nigerian government with the development and testing of an instructional model to improve the Hausa reading skills of Primary 2 children in Bauchi and Sokoto states.
- The instructional approach tested by RARA included designing materials for teachers and learners.
- The results of the research activity will inform the development of effective, affordable, and scalable strategies to improve children’s reading outcomes.
Objectives of the presentation

- This presentation focuses on the reading-related research component of Nigeria RARA; specifically, on the teaching and learning materials developed under the project.
- The presentation documents the process through which the materials were conceptualized.
- The intention is to provide guidance to similar projects implemented by donors, ministries of education, non-government organizations (NGOs), and private publishers.
- The lessons documented are most applicable in contexts in which existing materials do not adequately support early reading instruction or are very scarce.
- While Nigeria RARA materials are exemplars of a research-based approach to materials development, they are pilot versions. Similar initiatives are encouraged to build upon this model and make improvements of their own.
The presentation will address each of the main stages of RARA’s process for developing instructional materials:

1. Conduct preliminary research
2. Define a publishing plan
3. Plan contents
4. Develop a prototype
5. Develop contents and final layout
   - Copyright
6. Additional resources
1. Conduct preliminary research
The RARA approach built upon existing instructional models and reading materials for teaching reading in Hausa.

Using existing materials is possible in contexts in which the language of instruction has a stable orthography; there is a framework for literacy or language instruction in that language; and materials are available in that language as well.

To inform the design of the materials (as well as the instructional approach and activities), RARA conducted the following research activities:
Preliminary research

- **Reviewed existing materials for early reading instruction**
  - The purpose of reviewing existing materials was to evaluate their adequacy for supporting Hausa literacy acquisition. If enough materials were found to be adequate and could be reproduced or adapted, the program could save the time and effort required to develop new materials.
  - The review of existing materials included Hausa textbooks, folktale anthologies, and picture books from Nigeria; materials from Niger and English language materials. These materials were developed/published by state agencies in Nigeria, by a reading program in Niger led by a non-government organization (NGO), and by the DFID ESSPIN project (implemented by Cambridge Education).
  - The review examined whether available materials were adequate for achieving program objectives based on content, language, activities, and design.
  - The **review of Hausa reading materials was systematic, based on an evaluation rubric developed specifically for this purpose**. Each title was evaluated by a language expert, a reading expert, and a teacher. These three perspectives were then triangulated to arrive at a consensus. Irish-language materials were evaluated in terms of their approach and various aspects of design and layout (readability, usability, etc.).
  - The research concluded that while available Hausa language resources did not adequately support all the foundational reading skills, the content of several of the anthologies and picture books was useful and could be adapted to suit project objectives. It also helped to identify useful aspects related to design.
Conducted classroom observations to evaluate existing Hausa teaching practices

- The purpose of evaluating teaching practices was to understand the kind of support teachers needed to improve their Hausa instruction, as well as good practices that should be reinforced.
- Observations were conducted in 10 classrooms, and were recorded using a pre-designed instrument.
- The findings were used to inform the content and design of the new and adapted materials, as well as teacher training.
Preliminary research

- Reviewed existing curricula to identify areas for which the materials could assist teachers in their instruction.

- Reviewed the results of multiple EGRAs that had been conducted in Northern Nigeria to target instruction and materials to children’s actual developmental level.

- Conducted a baseline Early Grade Reading Assessment (EGRA) and survey of teacher knowledge and practices in a set of control and treatment schools to measure the impact of the materials and pedagogical approach developed.
RARA’s approach was also informed by the extensive research on reading instruction in alphabetic languages. Based on current knowledge on how to teach reading in the early grades, RARA’s objectives were to:

- Use materials that are developmentally appropriate for Primary 2 children.
  - Adequate for building foundational skills in reading in terms of sentence length, font size, etc.
  - Age-appropriate and engaging for children ages 6 to 9 in terms of topic, vocabulary, and story structure
- Provide children with enough materials to allow them to practice decoding skills, comprehension skills, and writing skills.
- Offer support to teachers for teaching the foundational literacy skills* in a systematic and explicit manner.

*Print concepts, phonological awareness, phonemic awareness, vocabulary, alphabetic principle, fluency, and comprehension
2. Define a publishing plan
Define criteria for determining which types of materials to publish

- Once it was clear that RARA could adapt the content of anthologies and picture books, but would have to develop all other content on its own, the next step was to establish the exact type and number of titles to be developed to support project objectives.

- Criteria for deciding which types of books, and how many, to include in the program were:
  - **Critical gaps that needed to be filled**, in terms of children’s foundational reading skills, teachers’ capacity for effective instruction, and access to appropriate materials for early readers
  - **Available time and budget** for developing, printing, and distributing high-quality books by the beginning of the school year
  - **Available local expertise** for developing high-quality materials
  - **Long-term sustainability**: the package of instructional materials could not exceed a cost that could be supported by the MoE through its own resources.
Based on the criteria listed previously, RARA decided on 3 books for classroom use:

1. **Teacher’s Guide** to support teachers
   - One for each teacher
   - To be developed from scratch, as existing materials were not suitable alternatives

2. **Pupil Reading Book** to develop foundational literacy skills
   - One for each child
   - To be developed from scratch, as existing materials were not suitable alternatives.

3. **Story Read Aloud** to strengthen children’s oral language and comprehension skills
   - One for each classroom
   - To be adapted from the anthologies and picture books that had been favorably evaluated
Why a Teacher’s Guide?

- RARA developed a Teacher’s Guide to fill gaps in the existing Hausa curriculum and in teachers’ instructional practices.
- The curriculum did not address the five foundational skills in a systematic and deliberate way.
- Teachers’ skills for developing lesson plans for reading instruction had been diagnosed as weak.
- This book provides guided lesson plans and pedagogical information about reading, writing and formative assessment that teachers need.
Why a Pupil Reading Book?

Based on the preliminary research, it was clear that the majority of children in the early grades did not have books that:

- They could read (age- and level-appropriate)
- Allowed them to practice reading and writing at the same time.
Why a Story Read Aloud?

- RARA developed a Story Read Aloud—to be read by the teacher to students—to build upon children’s oral language skills and strengthen their comprehension skills.
- Preliminary EGRA results showed that many students had good Hausa oral language (listening and speaking) skills.
- Available time was not sufficient to develop several storybooks.
- Available budget was not sufficient for purchasing existing supplementary materials, many of which were not reviewed as appropriate.
Why not a student workbook?

- **Cost-effectiveness**
  - A workbook would require more than 2 pages per lesson to effectively allow children to practice the foundational skills of reading and writing, including handwriting. All other specifications remaining the same, printing cost increases as the page count increases.
  - Workbooks are consumable and need to be replaced yearly, whereas the Pupil Book could have a shelf-life longer than a school year if handled with proper care.

- **Pedagogical effectiveness**
  - Activities in the Pupil Book and in the Teacher’s Guide already allowed students to practice writing by tracing the letters in the book, and using their notebooks, sand, each others’ backs, even the air, to practice writing.
Why not multiple supplementary materials?

- Developing multiple different storybooks would have required an investment in time and printing costs that was not possible for the program. It would also have implied costs that could not easily be sustained by the local government.

- Ideally, supplementary materials should be of multiple levels of text difficulty (leveled readers) so that children can read text that matches their skill level. Embarking on such a development would have implied training local talent, which would have required additional time and resources.

- Providing children with more books would have increased their exposure to print and given them more opportunities to practice reading skills. However, the materials that were decided upon filled the most critical gaps in classrooms, as evidenced by the preliminary research. (The short time-frame for the RARA research also meant that a large amount of new materials could not be designed; additional materials may be developed in a follow-on project.)
3. Plan contents
Define the structure of contents (1)

- The first factor in defining the structure and quantity of content to be developed is time available for instruction.
- Based on the national curriculum, time is defined by:
  - the number of terms during the school year
  - the number of weeks in each term
  - the number of hours dedicated each week to reading instruction
- In the case of RARA, it was decided that content would be developed for 25 of the 36 weeks in the school year
  - **Term 1**: 8/12 weeks; **Term 2**: 8/12 weeks; **Term 3**: 9/12 weeks
- The factors considered in making this decision were:
  - At the beginning of each term, it takes about two weeks for all students to join the class.
  - Regular instruction does not take place during holidays and exam periods.
  - Regular class time might be interrupted by strikes, inclement weather, etc.
- The first year of implementation indicated that more lessons were needed in at least one of the states, indicating the utility of a smaller-scale “pilot” before scale-up.
**Define the structure of contents (2)**

- Time available for reading instruction was 3 lessons of 40 minutes each week.

- RARA considered that the most effective use of available time was ensuring that children developed strong foundations in early literacy skills by the end of the school year. Likewise, teachers had to be able to successfully manage the objectives and pace of learning during the school year.

- Priorities for use of time were:
  - **Focus on the basics.** Refrain from an over-ambitious scope of learning during the school year.
  - **Pace lessons appropriately.** Don’t go too fast; allow time for reviewing and reinforcing learning before moving on to the next lesson.

- Based on these priorities for the use of instructional time, RARA decided to develop 25 lessons. Each lesson would be taught in its entirety in one day (40 minutes), and again on a second day (40 minutes), and so forth, until the end of the year.
Define learning objectives

- As previously stated, RARA’s objective was to offer systematic and explicit instruction of the foundational skills of reading that was targeted at children’s actual level of development of those skills as determined by EGRA scores.
- Learning should progress from easiest to more challenging and should build upon strong foundations.
- Each week’s lesson should provide an opportunity to:
  - Understand that words are made up of individual sounds, and that each sound is represented by a letter (phonemic and phonological awareness, alphabetic principle)
  - Develop fluency by reading meaningful connected text that is at the skill level of children and that uses the sounds and letters learned during that week.
  - Strengthen oral language skills (listening and speaking)
  - Build vocabulary
  - Strengthen comprehension skills
  - Practice writing and handwriting skills
**Structure lessons around learning objectives**

RARA developed a structure for each lesson based on 6 simple, achievable learning objectives each week:

<table>
<thead>
<tr>
<th>Lesson Objective</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Learn two new letter sounds or blends, beginning with the most commonly used sounds in the language.</td>
</tr>
<tr>
<td>2.</td>
<td>Learn how to blend letters to form syllables, join syllables to form words, and connect words to form sentences.</td>
</tr>
<tr>
<td>3.</td>
<td>Read short passages of connected text based on the words learned that week (decodable text), and building upon previous lessons.</td>
</tr>
<tr>
<td>4.</td>
<td>Listen to a story and answer simple comprehension questions orally.</td>
</tr>
<tr>
<td>5.</td>
<td>Build vocabulary.</td>
</tr>
<tr>
<td>6.</td>
<td>Learn how to write the week’s letters (capital and lower case).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Pupil Reading Book</strong></th>
<th><strong>Story Read Aloud</strong></th>
<th><strong>Teacher’s Guide</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lessons for learning objectives 1, 2, 3 &amp; 6</td>
<td>Lessons for learning objectives 4 &amp; 5</td>
<td>Guidance for all learning objectives and lessons</td>
</tr>
<tr>
<td>Each lesson to be taught twice (25 lessons)</td>
<td>1 story for each lesson (50 stories)</td>
<td></td>
</tr>
</tbody>
</table>
Below are the detailed parameters for planning the contents of each daily lesson, term by term. Notice that in some cases the level of difficulty of tasks increases as the school year progresses.

<table>
<thead>
<tr>
<th>Content</th>
<th>Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllable counting</td>
<td>3 words</td>
</tr>
<tr>
<td>Letters</td>
<td>2 taught explicitly</td>
</tr>
<tr>
<td>Syllables</td>
<td>2 taught explicitly</td>
</tr>
<tr>
<td>Decodable words</td>
<td>3 words, Term 1: 1–2 syllables; Term 2: 1–3 syllables; Term 3: 1–3 syllables</td>
</tr>
<tr>
<td>Decodable sentence</td>
<td>Term 1: sentence with 3–4 words; Term 2: 3–5 words; Term 3: 4–6 words</td>
</tr>
<tr>
<td>Illustration</td>
<td>Related to the passage, not overly complex. Will develop character, setting, and actions. Possibly used for syllable counting.</td>
</tr>
<tr>
<td>Passage reading</td>
<td>Term 1: 8–12 words, 3–4 sentences with a repetitive structure; Term 2: 10–20 words, 4–5 sentences, less repetition; Term 3: 20–30 words, 5–6 sentences, even less repetition</td>
</tr>
<tr>
<td>Sight words</td>
<td>2–3 per week</td>
</tr>
<tr>
<td>Story Read Aloud</td>
<td>75–150 words per reading; include before, during, and after activities; 2 vocabulary words explicitly taught.</td>
</tr>
</tbody>
</table>
In materials development, the term “scope and sequence” refers to the full range, or *scope*, of contents covered, and to the order, or *sequence*, in which they are presented, from the beginning to the end of the school year. The scope and sequence is a formal document, usually “owned” by the Ministry of Education.

Ideally, the scope and sequence should be developed *before* the materials as a way of informing the order in which lessons should be presented.

As part of the project’s design, RARA had the liberty to propose its own scope and sequence.

In RARA, the scope was determined by
- Program learning objectives
- National curriculum for Hausa
- Available time for reading instruction

The sequence was informed by
- Linguistic research on the most common sounds in the language, which guided the order in which letters were introduced.

RARA developed a template that helped to lay out the scope and sequence and translate it into lesson plan content.
RARA’s aim was not only that materials be effective in building the foundational skills of reading. The contents also had to be appropriate and engaging for children.

The specific criteria for ensuring that both the decodable text and the read aloud stories were appropriate were:

- Developmentally appropriate use of language (vocabulary and sentence structure at a level of difficulty that matches children’s skills)
- Age-appropriateness of contents (avoidance of taboo topics, violence, etc.; use of topics that were of relevance and interest to children)
- Cultural relevance
- Positive and equitable representations of gender and religious differences

RARA’s solution for making contents engaging was to develop characters that would appear throughout the Pupil Reading Book, offering a narrative thread that would keep children interested in each week’s lesson.
Develop characters

Equitable representation of gender

Gender equity is achieved not only through equal numbers of females and males, but through careful character development that challenges gender stereotypes.

Cultural relevance

The characters are a typical family from northern Nigeria.

Character profiles

Before drafting text, writers developed profiles of the main characters, including their:

- Physical traits
- Personal background
- Personality traits
- Likes and dislikes
- Afraid of…
- Best friend
- Favorite activities

Main characters
Nana and Abba
Once the characters were defined, the writing team planned the setting and plot for each of the 25 weeks based on the themes of the national curriculum for Hausa language instruction.

Special attention was paid to including both rural and urban settings to reflect the region’s diversity and expose children to both contexts as part of their learning.

<table>
<thead>
<tr>
<th>Week</th>
<th>Theme</th>
<th>Setting</th>
<th>Characters</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Home- Family</td>
<td>Bausa home compound</td>
<td>Nana/Kaka</td>
<td>Nana is playing hopscotch</td>
</tr>
<tr>
<td>2</td>
<td>Home-Family</td>
<td>Bausa home compound</td>
<td>Nana/Kaka</td>
<td>Kaka is cooking masa</td>
</tr>
<tr>
<td>3</td>
<td>Home-Family</td>
<td>Bausa home compound</td>
<td>Nana/Kaka</td>
<td>Kaka asking Nana to sell masa</td>
</tr>
<tr>
<td>4</td>
<td>Home-Family</td>
<td>Bausa home compound</td>
<td>Nana</td>
<td>Nana is knitting a hat for Baba</td>
</tr>
<tr>
<td>5</td>
<td>Home-Environment</td>
<td>Ringimi house</td>
<td>Abba</td>
<td>Abba is cleaning compound</td>
</tr>
<tr>
<td>6</td>
<td>Home-Environment</td>
<td>Ringimi house</td>
<td>Nana/Abba</td>
<td>Nana is visiting Abba</td>
</tr>
</tbody>
</table>

Etc.
Lesson structure – Pupil Reading Book

This is a sample lesson from the Pupil Reading Book (Term 1, Week 1). The lesson gets taught twice (two lessons) – introduction and review.

**Learning objective 1:**
Introduce letter sounds. Show how they combine to form words.

**Learning objective 2:**
Demonstrate how each letter is written.

**Learning objective 3:**
Develop fluency skills with decodable text based on the week’s lesson.
Based on the program’s learning objectives, these were some guiding principles for developing the contents of the Teacher’s Guide:

1. Provide step-by-step guidance for instruction to help teachers plan lessons effectively within the time allowed for each lesson.
2. Use clear, concise language.
3. Use the gradual release model (”I do–we do–you do”), which supports a student-centered approach to instruction. The teacher models the learning activity, the class performs the activity together, and then each student attempts the activity individually.
4. Include multiple songs per term to start the lesson, as well as visual, auditory, tactile, and kinesthetic activities.
5. Include optional activities for teachers who want to “Do More.”
6. Support teaching coaching activities by helping teachers reflect on their practice at the end of each daily lesson.
Preliminary research on teacher practices had indicated that teachers’ skills for planning lessons were weak. To help teachers plan each lesson’s activities and allocate available lesson time efficiently, the Teacher’s Guide proposed the following lesson plan, which included different types of activities:

<table>
<thead>
<tr>
<th>Primary Skill</th>
<th>Activity</th>
<th>Time Allocated (Minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Day 1</td>
</tr>
<tr>
<td>Phonological Awareness</td>
<td>• Song</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>• Beat the Words</td>
<td></td>
</tr>
<tr>
<td>Alphabetic Principle</td>
<td>• Letter Names and Sounds</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>• Syllable Decoding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Word Decoding</td>
<td></td>
</tr>
<tr>
<td>Fluency</td>
<td>• Sentence Reading</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>• Passage Reading</td>
<td></td>
</tr>
<tr>
<td>Comprehension</td>
<td>• Story Read Aloud</td>
<td>5</td>
</tr>
<tr>
<td>Application</td>
<td>• Handwriting</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>Total Minutes</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>
In the context of early grade reading projects that are tasked with building teacher capacity, such as RARA, the Teacher’s Guide becomes the main tool for supporting instruction.

As teachers will rely heavily on the Guide for teaching the lesson, instructions must be clear and concise so as not to interfere with the flow of the lesson. This is an example of a set of instructions, translated into English:

**Word Decoding (5 minutes)**

1. Write this decodable word on the chalkboard [     ].
2. Point to each syllable in the word as you slowly read the syllables.
3. Run your finger under the word left to right and read the word faster.
4. Direct the children to the triangle section. Repeat using the pupil book.
5. Repeat step four (4) with different group of pupils.
6. Repeat steps one to five (1-5) with the other words [     ].
Optional “Do More” activities

- To accommodate for variations between classes and teachers, the Teacher’s Guide also included additional activities that teachers had the option to use:

  - **Activities that students can continue doing at home to reinforce the day’s lesson (Homework).** The activities had to be simple, considering that many children do not have much time to do schoolwork after school hours, or in many cases, do not have adequate lighting or optimum conditions for desk work at home.

  - **Extra activities, based on the day’s lesson.** These extra activities were resources for teachers who managed to get through the daily lesson more quickly, either due to the strength of their skills, or because particular conditions in the class (fewer students, fewer interruptions) made it possible.
Support for teacher coaching activities

- As part of its comprehensive approach to improving early reading instruction in Hausa, a crucial component of RARA was teacher training and coaching.
  - Teachers participated in week-long initial and refresher trainings provided during the school year.
  - They also participated in small, school-based cluster meetings.
  - They were also visited by school supervisors serving as reading coaches.
- A final section of the daily lesson support includes short messages of additional advice for teachers, as well prompts (or questions) to guide their reflection on how the lesson had progressed on that day.
  - The reflections were to be written down in a fourth resource developed by the program, the Teacher’s Reflection Journal, which is not included in this presentation because it did not directly affect learning in the classroom.
  - The resource was developed so teachers could reflect on their instruction and apply their creativity to improve their own instruction, without relying solely on the Guide. It was also designed to be a resource for coaches to monitor teacher progress. However, the research found that teachers and coaches needed more time and training to effectively use and benefit from the Teacher Reflection Journal.
A teacher learns how to use the new materials developed under RARA
Building upon the existing materials review conducted prior to materials development, the RARA team did a second systematic examination of the content evaluated as usable and noted:

- A short description of the particular book or material
- Appropriateness of the topic and language for children aged 6–9
- The problem and solution (if any) of the story
- Words that could be explicitly taught as vocabulary

Based on this information, RARA selected stories for the Read Aloud and determined any necessary edits to the content:

- Any parts that did not comply with criteria for content appropriateness (cultural relevance; equitable representation of gender and religious differences; appropriateness of content and language).
As previously specified
- RARA needed to produce content for 50 story read aloud sessions throughout the year.
- Content of some of the existing supplementary materials in Hausa was found to be adequate for reproduction or adaptation.

Given that time available for each lesson was 40 minutes, and that time for listening to the story and answering comprehension questions was 5 minutes per lesson, the read aloud stories had to be short, or short fragments of longer stories.

RARA selected 15 stories from previously published works that would be adapted to produce 50 separate story fragments (one for each lesson).
Once upon a time, there lived a clan of bees who lived peacefully and were very helpful to each other. The parents of the bees in this clan forbade the bees from staying under the sun or near anything hot. However, one of the bees was very stubborn and hard of hearing and decided he would go bask in the sun. His siblings pleaded with him not to, but he refused and waited for them to go out of the house. As soon as they left, the stubborn bee went under the sun and alas—he melted completely! His siblings came back and saw him; they were really sad. Then one of them had a brilliant idea. They decided to take the melted bee and place him in a shade over night. The following day the bee had formed back again, but he looked completely different from what he used to look like. He was not as handsome as he used to be, yet his siblings were happy to have him back!
Lesson structure – Story Read Aloud

This is a sample lesson from the Story Read Aloud (Term 1, Lesson 1). Two different stories or story fragments are read each week.

**Learning objectives 4 and 5:**
- Listen to a short story.
- Words and sentence structure can be more complex as children’s oral language skills are stronger than their reading skills.
- New vocabulary words are highlighted in **bold**.

**Learning objective 5:**
- Answer comprehension questions based on the story.
4. Develop prototypes
What is a “prototype” in the context of materials development?

- The prototype is the proposed final version of a single unit as it would look in the printed book. In the case of RARA, a “unit” is a weekly lesson.
- Prototype development involves a writer, a designer, an illustrator, and an editor, or someone in charge of ensuring overall quality.
- Developing a unit prototype prior to developing the full contents of the book is an efficient practice because:
  - It can be used in a small-scale pilot to ensure the proposed contents and design are adequate for students and teachers before developing all content.
  - It provides an opportunity to make changes to the proposed “look and feel” of each unit or chapter before developing all of the content.
  - It provides information that can help plan content development in an efficient manner (e.g. time, personnel, and tools required.)
  - It provides information on final printing specifications (trim size, page count, color, etc.) early on in the development process.
Developing a prototype

- RARA considered aspects of readability and cost-efficiency in printing when developing prototypes. Producing books that were aesthetically pleasing and engaging for users was also an aim of the project.

- Readability is the ease with which a reader can understand a written text. Readability has been studied profusely by researchers of reading acquisition.

- Cost-efficiency in printing, as in many other areas, means getting the greatest value for money spent. Factors of cost-efficiency are the degree of wastage in printing (e.g., paper paid for vs. paper actually used) and durability of books in schools.

- RARA worked with a professional graphic designer specialized in textbook design. Designers are essential for any project involving the development of teaching and learning materials, as they know how to combine aspects of readability, cost-efficiency, and design (canons of page construction, aesthetics) into a coherent whole.
Ensuring readability

- The readability of content depends on the level of text difficulty. Children in the early stages of reading acquisition can benefit from text that adequately matches their skill level in reading:
  - Text should be comprised of letters and sounds that the child has learned (decodable text).
  - Vocabulary should be simple and easy to understand for beginning readers.
  - Text should use a simple sentence structure and there should not be too many lines of text on the page (low text density).
  - The topic(s) in the text should reflect children’s everyday life.
- Formatting:
  - Font type and size. Font should be large enough to be read easily. Letters should have a shape that is already familiar to students.
  - Space between lines of text. There should be enough space between lines of text so that children do not lose their place in the text.
  - Organization of text on a page. Page composition should be attractive but orderly and not include too many distracting elements.
Elements of readability in the Pupil Reading Book

Decodable text on page 3 uses letters and words taught in the week’s lesson. Only 3 lines of text.

Font: Andika Basic
Size: 32 pt

Wide space between lines of text.

Andika font makes letter identification easier for learners than a font like Times New Roman, for example.

<table>
<thead>
<tr>
<th>a</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>g</td>
</tr>
</tbody>
</table>
Elements of good design in the Pupil Reading Book

Entire lesson fits in a symmetrical, facing-page spread.

Information in header is isolated in a different color block.

The four main sections of the lesson are easy to identify.

One colorful illustration in the larger portion of the page.

Wide margins and a lot of "white" space on the page.

Story title is in a different color font, a simple cue that children can grasp.

Page number can be easily found – it is alone at footer of page.

Design elements are applied consistently throughout the entire book.

<table>
<thead>
<tr>
<th>Zango No.: 1</th>
<th>Mako No.: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nn Aa</td>
<td></td>
</tr>
<tr>
<td>na an nan</td>
<td></td>
</tr>
<tr>
<td>Nana na ana</td>
<td></td>
</tr>
</tbody>
</table>
| Nana na gida.

<table>
<thead>
<tr>
<th>Zango No.: 1</th>
<th>Mako No.: 1</th>
</tr>
</thead>
</table>
| N n N n N n  | Karatun lobar
| A a A a A a  |
| Na An n an   |

Nana na nan. Nana na gida.
Nana na wasan gala-gala.
When designing materials for competent readers, such as teachers, readability also needs to be considered. Issues of formatting, such as font type and size, line spacing, text density on a page, and overall organization of content also come into play when developing materials for adults.

In general, designing materials requires careful thought about the end user and the context in which the book will be used. The aim is to make materials “user-friendly.”

RARA wanted to produce a Teacher’s Guide that teachers could consult during a lesson. This implied:

- Ensuring correspondence between the Pupil Reading Book and the Teacher’s Guide.
- Providing clear visual cues for quickly finding instructions for the activity they are facilitating.
- Using printing specifications that would allow the teacher to have at least one hand free to use for writing on the board, etc.
RARA developed a simple system whereby students, who are still learning how to decode, could easily find the section on the page that corresponds to the activity the teacher is facilitating through the use of shapes. Children can recognize shapes more easily than letters at this initial stage of literacy development. These icons were also used in the Teacher’s Guide.

- Square indicates activity is about letters.
- Circle indicates activity is about syllables.
- Triangle indicates activity is about words.
- Star indicates activity is about sentences.
In addition to using shapes as specific activity prompts, the Teacher’s Guide used a simple key to guide gradual release:

- M is the initial letter for “teacher” in Hausa, indicating the “I Do” activity phase.
- D is the initial letter for “student” in Hausa, indicating the “You Do” activity phase.
- MD indicates the “We Do” activity phase.
- The clock icon was used to remind teachers of time allocated for each activity.
Guidance on how to facilitate each lesson was provided in 3 facing-page spreads, for a total of 6 pages per lesson. These are pages 1-2.

<table>
<thead>
<tr>
<th>Zango Na: 1 Mako Na: 1 Darasi Na 1 da Na 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kafin Darasi</strong></td>
</tr>
<tr>
<td><strong>M</strong></td>
</tr>
<tr>
<td>1. Rubuta waamun waka a kai zai.</td>
</tr>
<tr>
<td><em>Wakar Guwa</em></td>
</tr>
<tr>
<td>Idar muka toshi da same</td>
</tr>
<tr>
<td>Sani da gayi da_yyeman ka 2</td>
</tr>
<tr>
<td>Mammata iya ke kewa Guwa</td>
</tr>
<tr>
<td>ne da same</td>
</tr>
<tr>
<td>iya wani Bubuwa Guwa da rana</td>
</tr>
<tr>
<td>Mammata iya da same Guwa ce da rana</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zango Na: 1 Mako Na: 1 Darasi Na 1 da Na 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Waka</strong></td>
</tr>
<tr>
<td><strong>M</strong></td>
</tr>
<tr>
<td>1. Ruta waakan don dalibai su j,</td>
</tr>
<tr>
<td>tare da kowarzoyi amni da wakar ke fada.</td>
</tr>
<tr>
<td>ari taimaka wi dalibai sanin ma'arif</td>
</tr>
<tr>
<td>kalmeneen da ke da clipi wakar.</td>
</tr>
<tr>
<td>2. Sae rene wakar tare da nuna</td>
</tr>
<tr>
<td>kalmeneen a kai alld.</td>
</tr>
<tr>
<td><strong>M</strong></td>
</tr>
<tr>
<td>1. saa rene wakar tare da clipi</td>
</tr>
<tr>
<td>2. ka'a ni waa dalibai su rene wakar</td>
</tr>
<tr>
<td>ari sanin kowarzoyi amni da wakar ke</td>
</tr>
<tr>
<td>fada.</td>
</tr>
<tr>
<td>3. Nuni dalibi daliba daya ko fye don rene</td>
</tr>
<tr>
<td>wakar tare da nuna kalmeneen.</td>
</tr>
</tbody>
</table>

**Amon Sautin Gaba**

<table>
<thead>
<tr>
<th><strong>M</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Futta waamun kalma (Nan). Idar akwai</td>
</tr>
<tr>
<td>hoton kalma, sai taima dalibai su</td>
</tr>
<tr>
<td>ga dega ta cikin hoton da ke ba'awi.</td>
</tr>
<tr>
<td>2. Mammata futta kalma tare da ciffa</td>
</tr>
<tr>
<td>kowarzoyi gata.</td>
</tr>
<tr>
<td>3. Nuna yayan ga'alin da ke cikin</td>
</tr>
<tr>
<td>kalma da ja Zustu harfin.</td>
</tr>
<tr>
<td><strong>M</strong></td>
</tr>
<tr>
<td>1. Ka'a ni waa dalibai su futta kalma tare da ciffa</td>
</tr>
<tr>
<td>kowarzoyi gata.</td>
</tr>
<tr>
<td>5. Mammata taimaka ni daya zuwa na hukku</td>
</tr>
<tr>
<td>(1-4) da saarin kowarzoyi [Nan]</td>
</tr>
</tbody>
</table>

Large thumbnail of the Pupil Reading Book

Notice the use of icons.

Notice that each activity is clearly highlighted in its own text box. The name of the activity is in a blue text box.
These are pages 3-4 of the daily lesson plan.

Header and footer provide essential information about the user's place in the book.

This section corresponds to the Story Read Aloud passage for that day.
These are pages 5-6.

**Story Read Aloud comprehension**

**Homework**

**Writing**

**For teacher coaching activities**

**Do More section**
For RARA, it was very important to find a solution to allow teachers to easily manipulate the Teacher’s Guide during the lesson.

Teachers would need to consult the Guide permanently, especially in the early weeks of project implementation. This implied that teachers would have to hold the Guide in one hand while facilitating an activity with the other (e.g., writing on the board, calling on a student).

The solution was spiral binding, which allows the teacher to completely fold the Guide in half and hold it with only one hand.
The reality is that developing instructional materials almost always requires decisions whereby “ideal” specifications need to be sacrificed to work around time and cost constraints.

RARA made a significant effort to develop a high-quality Pupil Reading Book that had all of the characteristics of readable, engaging material.

RARA also endeavored to develop a user-friendly, functional Teacher’s Guide that was rich with content for teachers.

As the Story Read Aloud was not intended to be read directly by children, but by the teacher to the children, some elements of readability could be sacrificed in favor of cost savings on printing.

As long as children could see the large, colorful illustration while the teacher was reading the story to the class, the book fulfilled its function.

The Story Read Aloud had a total of 64 pages, the lowest of all titles despite the length of its contents.
Elements of functional design in the Story Read Aloud

Space for story text is small and line spacing is tight, in favor of making the illustration the largest part of page composition.

Sub-section titles are highlighted in a different font color and size for easy navigation through the page.

Margins are narrow to maximize use of space.

Illustration is colorful and conveys the action of the story.

Header and footer provide essential information about the user’s place in the book.
Factors that affect printing cost

- Because the design proposal of each book is developed during the prototype stage, decisions on printing specifications are also made during this stage.

- Printing specifications include:
  - Trim size (width x height in millimeters)
  - Total number of pages (count both sides of each sheet)
  - Colors (full color, black and white, or partial use of color) for cover and interiors
  - Paper type for cover and interiors
  - Binding type
  - Special finishes for the cover

- The number of copies printed (print-run) also affects unit printing cost, especially for print-runs under 50,000 copies. As the number of copies increases, the unit cost decreases (economies of scale).
  - Printing more copies than immediately required may reduce unit printing cost, but it can also imply an additional storage cost if not all copies are immediately distributed.
Decisions on printing specifications of each book

- Printing specifications affect unit printing cost, but also “user-friendliness” and functionality of each book, as well as their durability in time.
- Decisions on printing specifications require weighing the tradeoffs between these factors. There is no “ideal” scenario for these decisions. They depend on each project’s priorities and available resources.
- Depending on a project’s procurement regulations, it may be possible to request quotes from printers during the prototype stage to get an estimated unit printing cost before approving prototypes. Request quotes for several different options of printing specifications to weigh the difference between each one.
- Contacting printers during the prototype stage can also give the project an idea of printing specifications that are possible based on the capacity of local printers (machine types, etc.). Other USAID early grade reading programs have invested in assessments of local printing capacity as part of the preliminary research stage.
## RARA printing specifications

Below are examples of some of RARA’s decisions on printing specifications.

<table>
<thead>
<tr>
<th></th>
<th>Pupil Book</th>
<th>Teacher Guide</th>
<th>Read Aloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trim size (width x height)</td>
<td>B5 (176 x 250 mm)</td>
<td>A4 (210 x 297 mm)</td>
<td>A4 (210 x 297 mm)</td>
</tr>
<tr>
<td></td>
<td>B5 and A4 are references for international standard trim sizes with proven cost-efficiency (they prevent paper wastage). The pupil book is smaller than books for teachers because children are smaller (user-friendliness).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total pages (not including cover)</td>
<td>72</td>
<td>180</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Page counts must always be an even number divisible by 4, 8, 16, or 32 to prevent paper wastage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color of pages (not including cover)</td>
<td>Full color</td>
<td>Two colors (cyan and black)</td>
<td>Full color</td>
</tr>
<tr>
<td></td>
<td>Printing in color is more expensive than printing in black &amp; white, but it can make books more engaging and aesthetically appealing. Using only two colors is a way of adding color while saving on cost.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binding</td>
<td>Perfect binding (pages glued to spine)</td>
<td>Spiral bound</td>
<td>Saddle stitched (pages stapled to spine)</td>
</tr>
<tr>
<td></td>
<td>Binding type affects cost but also durability and user-friendliness of a book. Binding type depends on the number of pages (saddle stitching is only possible for books with less than 80 pages, approximately).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Develop contents and final layout
Planning for materials development

- Once the full contents have been planned, and unit prototypes have been approved, the project can move forward with creating the content for all units and inserting it into the layout (design template).

- The content planning and prototype stages provide clues about:
  - The type of expertise that needs to be involved in development (e.g., language experts, reading experts, illustrators, designers, etc.)
  - The time required for each task (writing, illustrating, doing the layout, quality control revisions)

- Based on this information, planning for the development stage requires:
  - Contracting expertise and assessing the type of resources contractors need. Resources may include aides, such as templates for writers, if local capacity for materials development needs to be strengthened.
  - Developing a work plan, assigning responsibilities, defining a workflow, and determining which tasks can be done independently and which will require a group workshop setting (and where it will take place).
RARA created a multidisciplinary Reading Technical Working Group (RTWG) to develop/adapt materials. The purpose of the RTWG was to ensure contents of all titles were high-quality from a linguistic, pedagogical, and literary perspective. It also served to foster collaboration between institutions responsible for early grade reading and to build local capacity to facilitate ongoing efforts to improve EGR.

The RTWG was composed of:
- RARA Reading Specialist and RARA staff
- Officials from the State Universal Basic Education Board (SUBEB) of Nigeria
- Lecturers from the Nigeria College of Education, including the heads of the Hausa language department
- Several primary school teachers
- A Hausa language expert (a linguist)
- An English – Hausa translator
- A reading specialist (consultant)
- Technical specialists from the RTI home office (supported remotely)

RARA worked with a local graphic designer and illustrator, both of whom worked on site with the rest of the team.

Materials development occurred in a workshop setting during the span of 3 months.
Members of the RARA Reading Technical Working Group
RARA’s thoughtful approach to building a multidisciplinary team of mostly local talent for materials development had several advantages:

1. Materials were not created by the project, but by the government, which created a sense of ownership.
2. Many of the people who helped develop the materials could also train teachers because they were intimately familiar with the materials and approach to reading instruction.
3. Those who developed the materials knew the context well and could advise on character development, word choice, etc.
4. The team included people from Bauchi and Sokoto states, who knew the corresponding Hausa dialects, and could ensure the materials would be acceptable in both locations.
5. Having the illustrator and designer work on site with everyone else facilitated communication between all team members and expedited the process of making changes to the design and layout.
Quality control

- True to its systematic approach to all stages of materials development, RARA established clear expectations for quality of content:
  - Developed a tool for guiding the writing process of the Pupil Reading Book. The template included clear instructions for the content to be developed for each section of the Pupil Reading Book and the Teacher’s Guide, as well as a section for monitoring quality assurance controls (editing).
  - Consulted similar projects to gather advice on best practices for materials development. Among the key pieces of advice it received was to develop a very clear Scope of Work (SoW) for the graphic designer and the illustrator.

- Quality control revisions were made at the first draft stage (written by hand), at the second draft stage (typed in Word), and again once they were inserted in the design template.
### Pupil Book Lesson Guidelines

**Theme**

*Guidelines:* Identify the theme for the week.

**Beat the Word**

*Guidelines:* List 4 words that have 2–4 syllables. Ideally, the words could be communicated through an illustration, and use sounds that are being taught that week. These words will not appear in the pupil book. They will only appear in the teacher guide.

<table>
<thead>
<tr>
<th>Letters</th>
<th>Movement for letter sound 1</th>
<th>Movement for letter sound 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Guidelines:</em></td>
<td><em>Guidelines:</em> The action should be something that either:</td>
<td><em>Guidelines:</em></td>
</tr>
<tr>
<td>- Upper and lower case.</td>
<td>1. Represents the sound of the letter. (Example: A running engine can sometimes sound like the letter m.) <strong>OR</strong></td>
<td>- Same guidelines as for the letter sound 1.</td>
</tr>
<tr>
<td>- Even if they are not both new, we will teach two explicitly.</td>
<td>2. The first letter of the action makes the sound. (Example: March for letter m.)</td>
<td>- Even if the letter sound movement was already introduced, please write the description here.</td>
</tr>
</tbody>
</table>

**Syllables – Guidelines:**

*Guidelines:* List two syllables. Both of them should include the new letters. There might be times when one of the syllables uses a vowel that has been taught in previous weeks.

**Decodable words – Guidelines:**

- List 3 words. Term 1 words should be 1–2 syllables; T2 1–3 syllables; T3 1–3 syllables.
- The words should use the syllables that were taught in that week’s lesson or in a previous week. (Each part of the word should have been taught explicitly at some point.)
- Include an English translation.

**Decodable sentence – Guidelines:**

- Identify one sentence. It should have decodable words.
- Term 1 sentences should be 2–4 words; T2 3–5 words; T3 4–6 words. The sentences should use decodable words that were taught in that week’s lesson or in a previous week.
- A sentence can have one sight word. This is a word that the parts have not been taught in isolation. Underline the sight word.
- Include an English translation.

### Description of the illustration for the story

*Guidelines:* Describe the illustration for the illustrator. It should be related to the passage as it will support word identification. It should not be overly complex. It might include images that are used in the Beat the Word activity.

*Note:* We should identify core characters that appear throughout the 48 lessons (e.g., A named girl, a named boy) and possibly the same setting.

### Passage Reading

*Guidelines:*

- Write a passage related to the theme.
- T1 passages should contain 8-10 words, 3-4 sentences (3 dominant); repetition of structure (Example: Mom is here. Dad is here. Dan is here. The family is together.)
- T2 passages should contain 10-30 words, 4-5 sentence (4 dominate), and less repetition than T1 passages.
- T3 passages should contain 20-30 words, 5-6 sentences (5 dominate) and even less repetition.
- The passage should have decodable words. It can include the decodable sentence that was written for the lesson.
- The passage can have 2 to 3 new sight (a word that not all of the letters have been in isolation) words.
- Include an English translation.
- Underline the sight words.

### Read Aloud

*Guidelines:* This is a placeholder for us to list the story or page numbers from a longer story that will be used in this week’s lesson. These stories will not appear in the pupil book. They will only appear in the teacher guide.

### Your turn

*Guidelines:* This will be the same for each week. Nothing needed to be entered.

*Option 1:* Practice writing your letters.

*Option:* Read today’s lesson to a friend or family member.

### Term Number

*Write the term.*

<table>
<thead>
<tr>
<th>Term Number</th>
<th>Week Number</th>
<th>Writers (date and initials)</th>
<th>First Proof (date and initials)</th>
<th>Entered to soft copy (date and initials)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write the term.</td>
<td>Write the week number.</td>
<td>List the authors of this week’s materials and the date written.</td>
<td>Another writer or a facilitator should review the content to verify it conforms to the guidelines. Date and reviewer’s initials should be entered.</td>
<td>After proof has been reviewed, the content from this hard copy should be entered into a soft copy. Date and typist’s initials should be entered.</td>
</tr>
</tbody>
</table>
When developing high-quality instructional materials, “haste makes waste”. Timelines that underestimate that amount of time and work involved in the publishing process increase the risk of inefficiencies; either books do not arrive in schools on time, or books that are developed in a rush fall short of quality standards. In either case, children’s learning process may suffer.

Based on time available for project implementation, RARA invested 6.5 months in conceptualizing and developing materials, though ideally would have invested more time.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceive original concept</td>
<td>1 month</td>
</tr>
<tr>
<td>Create and test prototype</td>
<td>1 month</td>
</tr>
<tr>
<td>Write, illustrate, layout + quality controls (editing)</td>
<td>4 months</td>
</tr>
<tr>
<td>Get approval from MoE and finalize for print</td>
<td>0.5 month</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>6.5 months</strong></td>
</tr>
</tbody>
</table>
Copyright under RARA

- Issues of copyright should be considered and addressed early on in the project; ideally, from the content planning stage.
- Copyright is a type of intellectual property that applies to literary and artistic works (e.g., stories, illustrations, book design).
- Copyright specifically includes the rights to:
  - reproduce copies of the work;
  - prepare derivative works based on the original piece;
  - distribute copies to the public or display and perform the work publicly.
- Copyright protects the original creators of literary and artistic works but also determines who has access to the content.
- RARA’s approach to copyright management was informed by international copyright law, as well as by USAID’s interest in holding copyright but making materials widely accessible by reducing copyright restrictions.
RARA’s decisions on copyright management also depended on who was the original author of the content (text, illustrations, design).

As previously explained, RARA developed the Pupil Reading Book and the Teacher’s Guide from scratch, but adapted existing, copyrighted materials for the Story Read Aloud.

In the case of the Pupil Reading Book and the Teacher’s Guide, RARA made sure that contributors of content (text, illustrations, design) were compensated for their contribution, but asked that they assign copyright of their work, in writing, to the project.

In the case of the Story Read Aloud, RARA made sure that it had explicit permission, in writing, to reproduce and adapt the works.

3 of the stories were from an anthology published by a commercial publisher and were reproduced with written authorization from the original author.

12 of the stories had been published by the American University of Nigeria and were openly licensed through Creative Commons.
What is “Creative Commons”?  

- “Creative Commons licenses are legal tools of international use that streamline the process through which copyrighted content can be searched for, discovered, and used.” (Creative Commons, 2015)

- Creative Commons licenses facilitate and accelerate the dissemination of content because
  - conditions for use are pre-stated clearly;
  - there is no need to contact the copyright owner;
  - available rights are gratis.

- If a publication clearly states that it is licensed under Creative Commons, you can use it at no cost, and without contacting the copyright owner, under the conditions stated in the license.

- Look for a logo that looks something like this:
RARA materials are licensed under a Creative Commons Attribution License 4.0 (CC-BY), which means that anyone is free to copy, distribute, transmit, and adapt the work as long as they attribute the work to Nigeria RARA, using the following language: “Originally developed under the Nigeria Reading Access and Research Activity and licensed under the Creative Commons Attribution 4.0 International License.”

ENJOY!
6. Additional resources
Access to RARA materials

- All materials developed under RARA are available for download, use, and adaptation in any form under a Creative Commons license. You can access the final PDFs here:
  - Teacher’s Guide
    https://www.eddataglobal.org/countries/index.cfm?fuseaction=pubDetail&ID=676
  - Pupil Reading Book
    https://www.eddataglobal.org/countries/index.cfm?fuseaction=pubDetail&ID=679
  - Story Read Aloud
    https://www.eddataglobal.org/countries/index.cfm?fuseaction=pubDetail&ID=677

- The review of existing materials, including framework and evaluation instruments, is available here:
  https://www.eddataglobal.org/countries/index.cfm?fuseaction=pubDetail&ID=654

- Visit the Nigeria page on the EdData website for all other RARA documentation:
  https://www.eddataglobal.org/countries/index.cfm?fuseaction=showdir&pubcountry=NG&statusID=3&showtypes=0&startRow=1

Resources on book costs


Resources on copyright


- Creative Commons. (2015). *About the Licenses*. Retrieved from Creative Commons Web site: https://creativecommons.org/licenses