

Structured Pedagogy

GUIDE
4

Teaching and Learning Materials Development



INTRODUCTION

Teaching and learning materials, including a teacher’s guide and textbooks, are a core pillar of a structured pedagogy program. These materials must be designed to support skills in line with the curriculum and scope and sequence, discussed in detail in Guide 3 of this Structured Pedagogy series. Here, we discuss decisions that must be made and steps to take when developing TLMs. While not discussed in detail in this brief, **piloting of materials before large-scale rollout is essential, as is planning for revision of materials based on teacher feedback and challenges found during rollout.** It is also important to note that this development process, starting with the scope and sequence and ending with print-ready copies, typically takes 6–12 months. Trying to accelerate inevitably results in lower quality materials and risks delays in getting the books to students.



DECISIONS/CONSIDERATIONS REGARDING MATERIALS

Before beginning materials development, decide what types of materials to develop. For example, do you want the students to be able to write in their books or not? For reading, do you want separate decodable books, or should all reading texts be included in the textbooks? What kinds of math manipulatives (objects for children to use in math class, such as counters) and teaching aids should be used, and will you provide them or expect teachers to make them? Most of these

decisions will be driven by budget limitations, local preferences, and teachers’ capacity. In all cases, the purpose that the materials serve for instruction must be kept in mind, which might be summarized as shown in Table 1. Due to the limited scope and space, this guide will focus on textbooks and teachers’ guides as the minimum necessary materials, though it is important to consider other essential learning materials that would support learning.

TABLE 1. Learning materials’ purpose

Literacy	Numeracy
Reading instructional materials should give a chance for: <ul style="list-style-type: none"> the teacher to model (I do) skills and students to follow as the teacher is modeling. the students to practice with guidance (We do), either as a whole class or in groups; and the students to practice independently (You do), individually and/or in small groups. 	Mathematics instructional materials should give a chance for: <ul style="list-style-type: none"> the students to attempt to make sense of a new problem” to “solve a new problem”, usually at the start of a lesson, individually and/or in small groups; the teacher and students to jointly discuss problem solving strategies; the students to practice solving additional problems independently, individually and/or in small groups; and the students to have hands-on practice with manipulatives when new concepts are introduced.
All subjects should: <ul style="list-style-type: none"> provide opportunities for routine checks for understanding, and incorporate opportunities for remedial practice (for struggling students) and/or enhancement (for more advanced students). 	



Preparing for Content Development

Map out a unit or week of lessons—Before embarking on writing content of the textbook and teacher’s guide, you need to look at the scope and sequence and any other agreements made during the scope and sequence process and decide what a unit of lessons will look like. This includes the number of lessons in a unit and what skills will be taught on which days, as well as possible types of activities and time for each activity. Generally, it is ideal for units to follow a predictable pattern. For example: *The Tusome reading program has 5 lessons per week. Days 1 and 3 are new content. Days 2 and 4 review and extend content from the previous day, and Day 5 is used for review of all content and assessment.*¹ Figure 1 shows this pattern in the time table for units in Grade 1 English. Predictability makes it easy for teachers and students to know what is coming next and to focus on learning the skill rather than learning new instructions. Consider how skills, activities, and time spent on different skill areas need to change as the year progresses, in keeping with the scope and sequence. When working

on multiple grades, ensure this is done for each grade, taking into account what is being included in the previous grade. In essence, the idea is to start writing out what the weeks and daily lessons will look like as a whole, given the skills being developed according to the scope and sequence.

Criteria for content—Once there is a good idea of what the units will look like, and referring to the scope and sequence, the core content will begin to fall into place. In order to prepare for the lessons and units to then be developed into book content, provide criteria or guidance for the writing team. For example, for reading, it will not be enough to simply ask writers to write a text about a theme or to choose three words for a particular activity. Writers will need guidance on how to decide which words to use. Should the words in a particular lesson be 3 letters? Or 4? How many words should the text have in each lesson, and how will that increase across the year? For math, the writers will need similar cues on how to develop problems for activities for each lesson. For example, for 2-digit addition problems at what point do we include problems with regrouping versus no regrouping? **In addition, math writers should take into consideration the number of manipulatives needed for each activity so we do not over burden teachers.** Writers will need to know that content, especially texts, should be relevant and adapted to lived experiences of children. Math content should make connections to real life situations. Content should also be relevant to any themes included in the curriculum. Much of this information will appear in the scope and sequence, but it will be important to have this information clearly stated for writers either in the scope and sequence or writing templates—and if adjustments must be made as the content is being laid out, they should be similarly adjusted in the scope and sequence document.

FIGURE 1. Tusome Grade 1 English Timetable (minutes)

Reading and Writing Lessons (36 to 150)

Activity	Unit Lessons				
	Introduction 1	Practice 1	Introduction 2	Practice 2	Unit Review
Phonological Awareness	3	3	3	3	3
Letter Knowledge	3	2	3	2	4
Word Reading	4	3	4	3	5
Vocabulary & Common Words	5	4	5	4	5
Grammar	5		5		5
Pupil Text Reading	5	5	5	5	
Teacher Read Aloud		4		4	
Comprehension Questions	5	5	5	5	
Writing Classwork		4		4	8
Total Time	30	30	30	30	30



DEVELOPING THE TEXTBOOK

The student book and teachers’ guide should be planned together, but the student book may be written first so that the teachers’ guide will be aligned to and correctly reference student book pages. It is important to bring the writers together to develop the textbook, rather than have them work individually at home. A writing team ideally will include people with complementary skills, including subject expertise and writing experience. See the table below for an example of a materials development team.

When organizing the teams, it is helpful to plan to have one or two of the team members assigned

as reviewers (perhaps the curriculum expert and a teacher). They can then review lessons as they are being created, since revision on some of the initial lessons may impact how future lessons are written (see Table 2).

When planning for the writers’ workshop there are two main aspects to address: the documents and tools that will be needed and the facilitation of the workshop itself.

Documents and Tools

- Templates for the writing team that clearly lay out what to write for each unit and lesson, including the criteria



TABLE 2. Material Development Personnel

Participants	Expertise	Role
Instructional subject matter expert	Expert not only in the subject but also in how to teach and develop curriculum for the subject and grade level	<ul style="list-style-type: none"> • Support design of instructional approach and present it to the group • Support the writers and reviewers as necessary • Guide development of teacher's guide scaffolding/scripting
Production manager	Expertise in book production maybe a staff or publisher	<ul style="list-style-type: none"> • Support with managing the process • Help make production-related decisions
Reviewers	Staff, consultants or ministry of education, who have good understanding of the instructional approach and how to develop content	<ul style="list-style-type: none"> • Review writer's work against the scope and sequence and writing criteria • Support in development of teacher's guide scaffolding/scripting
Writers	Staff, teachers, ministry of education, local authors who have some experience developing curriculum or content	<ul style="list-style-type: none"> • Write the content • Teachers support in development of teacher's guide scaffolding/scripting
Graphic designer	Expertise in layout development especially of textbooks and InDesign	<ul style="list-style-type: none"> • Design layouts for books
Administrative support	Expertise in organization and administrative tasks	<ul style="list-style-type: none"> • Provide administrative support

- Handouts of key documents, such as the scope and sequence, any previous books that the team might need to reference, and a computer for each group to use for writing
- A brief on the purpose of the workshop and the criteria for writing content. Depending on the writers' experience, you may also need to present concepts about the development of skills for the subject and grade level as well as guidance on how to write certain kinds of content, such as fictional stories or informational texts.

Writers' Workshop Facilitation

- The workshop will likely begin with presentations explaining the instructional approach, making any final decisions about layout or team formation, and possibly targeted training on how to develop certain content, such as story-writing. This should be led by an expert in instruction for the subject and grade level, perhaps a staff member or consultant experienced in curriculum and instructional design.
- Allow the writing team(s) to work on one lesson at first, then have a reviewer give feedback before the group moves on. Once certain the group understands the task well, allow them to work on a full unit before reviewing their work. The work should be planned so all content is developed by the end of the workshop as much as possible. If you have less time, bring on more writers—though consider the balance of quality work and speed when bringing on less-experienced writers.

Content Review and Revision

Once the first draft of the content has been developed, there will likely be a need to review the content and make revisions. Use a smaller group to review and make revisions. The reviewers from the writers' workshop may be best placed to handle this.

Also, at this stage, include at least one or two people from the ministry who will be approving the book for use in classrooms. Having their eye on the content as it is being finalized can help avoid any surprises and likely will speed up the approval process.

During this process, a checklist or review tool will help focus the work. Reviewers will want to check:

- Does content match the scope and sequence?
- Does content match the agreements or principles that were decided upon?
- Does content match the criteria that were used for content development?
- Is the language appropriate for the grade level? (difficulty of words, sentence structure, etc.)
- Are texts engaging and appropriate for the grade level (no violence or inappropriate subject matter)?
- Are there typos or grammatical errors?



DEVELOPING THE TEACHER'S GUIDE

Teacher's Guide Decisions/Considerations

There are a number of decisions to make about teacher's guide design and formatting, before the guide is developed. Recently RTI carried out a cross-country study of teacher's guides used in large-scale structured pedagogy reading programs that produced a number of useful findings to help guide these decisions.² The following are based on findings from this study.

Instructional approach and activities. In order to decide what instructional activities will be suggested for lessons, a clear approach to instruction will be needed. The time available for each lesson and available resources will help narrow down the choices. In many contexts a direct instruction³ approach can be useful for reading in particular, as it utilizes explicit and systematic planning for each lesson, which helps make clear what teachers and students are supposed to focus on. Associated with this approach is the gradual release model.⁴ One common gradual release approach is "I Do, We Do, You Do":

- 1) I do (teacher models),
- 2) We do (teacher and students practice together), and
- 3) You do (students practice without the teacher).

This model can be very useful for learning discrete skills such as letter sounds or word reading. For higher level skills in reading, such as some comprehension strategies like main idea, this approach may not fit as well.

Similarly, for numeracy, conceptual understanding and less discrete skills are not supported as well using the I do, We do, You do approach. For numeracy, ensure instruction allows time for students to solve problems and share solutions guided by teachers, and for students to work independently.⁵ For example, the teacher might guide students to understand simple addition by having them explore a problem using counters first, then discussing what they found and building a model for solving simple addition problems together. See Guide 3 on scope and sequence for more detail.

Once you are settled on a core instructional approach, collect example activities that fit the approach for each skill set that will be taught. Creating something like an activity bank can help, especially when involving ministry or other stakeholders who may be new to the approach. This step will require significant support from an instructional expert in literacy or numeracy for the targeted grade levels of the program.

Level of scaffolding for the teacher. Consider the capacity of teachers and how the instructional approach will align with context. Based on those considerations, you can decide how much scaffolding for teachers will be included. This pertains to both the degree to which full, daily lessons plans are presented in the guide, and the degree to which the guide is "scripted," that is, whether teachers are given explicit instructions for every activity, including what to say to students, or they will receive less explicit, or even minimal, instructions.

This may be the biggest and most complicated decision to make. It is also an important reason to pilot the materials before full implementation. **The RTI teacher's guide study found that teachers appreciated a high level of scaffolding or scripting, but did not necessarily need it for the whole teacher's guide. The final guidance from this RTI study is to begin in the first weeks with more heavily scaffolded lessons and taper off as the year goes on.** This will help in two ways. First, teachers will gain more independence over time. Second, the length of the teacher's guide will be reduced. Think of scripting as an example to teachers of the kind of teacher talk that is explicit and leads to student understanding. Once teachers understand this way of talking with students, it is no longer necessary to repeat it.

Teachers' prior knowledge and experience. It would be good to include scaffolding that would help teachers anticipate possible student responses and provide tips for feedback. For example, A guide could give teachers tips on how to remediate common errors in arithmetic—useful if students solve $35+29$ as 54 instead of 64, for example.

Organizing the lesson guidance. Another insight gained from the teacher's guide study was that guides that included everything necessary for a lesson in one place were used more effectively. Having to search in multiple places in a book for activity instructions, content, and teaching aids will mean teachers might miss something in their lesson preparation. For this reason, make sure the teachers' guide includes references to all materials, including any essential learning materials, objectives and simple assessments for each lesson. **Also, designing the guide so that an image of the textbook page can fit on the same page was well appreciated by teachers, as they then did not have to go back and forth between books while teaching.**





Length of each lesson. Instructions for each lesson should be on one page, or on two facing pages, though this may vary depending on the length of classes. **When making this decision, keep in mind that teachers are more likely to carry and use a guide that is shorter.** Make a few mock-ups and see what seems realistic. Also pilot with teachers to understand what they prefer (Guide 2 Designing an effective structured pedagogy program). This will also force you to think hard about the most essential things to include.

Use bolding, italics, underlining systematically. Using formatting and font styles in a systematic way can help save a lot of space, but has to be CONSISTENT on every page. For example, you can bold the content (target words, syllables, numbers, or problems) in each lesson or you can put in italics anything that teachers are supposed to say to students. Whatever decision is made about the format must be purposeful and used the same way in every single activity on every page or teachers will be confused.

include the steps or instructions for each activity as well as any explanations of concepts that might be necessary such as grammar concepts or defining mathematical vocabulary. The scripts or instructions should be concise and very clear with no extraneous language. Have writers imagine they are talking to a classroom and need to explain in as few words as possible the skill or concept. We have found it effective to use a smaller group of writers with more expertise from staff and ministries of education, but also essential is involving teachers either in writing or reviewing to ensure the language is clear and useful to teachers. This process will require an expert in instruction for the subject and grade. It should be the same one that supported the scope and sequence and textbook content development, if possible.

Assuming the guide will begin with a high-level of scaffolding, such as full scripting, and taper to less scaffolding, such as no or very little scripting, make sure that both long and short scripts are developed ahead of time for all activities. It can help to keep track of them in a large table or spreadsheet.

Week 2 Lesson 2

Objectives:
By the end of the lesson, the pupils will be able to:
• Recognise the letter [j] and say the sound /j/.
• Ask and answer simple questions about themselves (the pupils) in English.
• Listen to the story *The BIG Carrot* and answer comprehension questions about the story.

Materials:
• Flashcards with the letters [j] and [i].
• Flashcards with the pictures of *jump, jog, juggle, and jet*.
• Flashcards with pictures of a bell, carrot, man and his wife, pulled, soup.

Instructional activities

Song / Rhyme 3 mins.
1. "Today we will learn to recognise the letters [j] and [i] and say the sound /j/ and ask/answer questions about yourself!"

2. "First, I will sing a song. This song is about little bell!" **NOTE: Teachers do not need to write the words down—this is a listening activity. They can refer to the Flashcard of the bell to help pupils understand the song.**
*Jingle, jingle, little bell
Jingle, jingle, little bell
I can ring my little bell.
Ring it high.
Ring it low.
Ring it fast.
Ring it slow.
Jingle, jingle little bell,
I can ring my little bell.
Jingle, jingle little bell,
I can ring my little bell.
Ring it left.
Ring it right.
Jingle, jingle little bell,
I can ring my little bell.*

3. The teacher introduces the song line by line; the pupils repeat the line.
4. The teacher and the pupils sing the song together.
5. The pupils sing the song alone.

Alphabetic Principles 5 mins.
Do this if you hear the sound /j/ (Go to Box 1 in PB, Week 2, Lesson 2).

1. Explain to the pupils that you are going to say some words and that the pupils must listen carefully; if they hear a word starting with the sound /j/, they must put their hands on their head; if they don't hear the /j/ sound, they keep their hands on the desk.
2. Say the word: *jingle*. (Pupils should put their hands on their heads.)
3. Repeat the activity with the words: *jet, juggle, window, jog, egg, jump, exit*.
4. The pupils identify the words that start with the /j/ sound.
What sound do these words start with?
5. Explain to the pupils that you are going to say some words and that the pupils must listen carefully and say the sound they hear at the start of the words.
6. Say the words: *jet, juggle, jog, jump*.
7. Repeat the activity with the words: *jam, just, job, job*.
8. The pupils identify that the words start with the /j/ sound.

Letter Sound Practice 3 mins.
1. "Now, I will say the letter j song."
j j j
j is for jump
j is for jet
j says /j/ /j/ /j/

2. The teacher introduces the song line by line; the pupils repeat the line.
3. The teacher and the pupils sing the song together.
4. The pupils sing the song on their own.

Book Production Considerations

Developing the content is only part of the book development process. Both the textbook and teacher's guide must be designed and the content put into a format that can be printed. This process is not insignificant and should be included in the planning of the books. The following are the major considerations and steps to take.

- **DECIDE WHO WILL PRODUCE THE BOOK:** Decide whether the program will handle all of the production elements in house or a publisher can be hired to support this process. A publisher will have all the expertise necessary in one place; however, it will require a bit more time to go back and forth with layouts and approvals.
- **DETERMINE THE TIMELINE FOR DEVELOPMENT TO PRINTING:** Once the decision on how to produce the book is made, a timeline will be essential. Start at the beginning of the school year, then plan for time to train teachers prior to it. Before that training, you will need at least 6 months for printing for a large-scale project. This will dictate when the print-ready file must be final and approved by the government. Make sure you account for the time needed for the approval process, as this can take months.
- **PREPARE FOR LAYOUT:** Designing the layout for each book well in advance is very important. Do not wait until the content has been developed to design the layout. This may result in having to cut or rewrite content. When designing layout consider the following:

THE LONGEST WORK OF THE GUIDE DEVELOPMENT WILL COME IN DEVELOPING THE TEXT FOR THE ACTIVITIES IN THE LESSONS

Writing the Teacher's Guide

The teacher's guide can be developed in tandem with the textbook, or subsequently. In either case, the lesson structures, core activities, and content will be linked to the scope and sequence and should have been laid out when preparing for textbook development. **The guide should be either written by individuals well experienced with the instructional approaches of the structured pedagogy program, or closely guided by an instructional expert for the subject and grade level.**

Develop scaffolding/scripts. The longest work of the guide development will come in developing the text for the activities in the lessons. The text should



- **Book size**—This may be dictated by the government, but ideally a textbook would be B4 size so it is easy for smaller hands to hold. Teacher’s guides can be A4 or something that is also easier for teachers to hold.
- **Icons**—These are helpful as an aid for students and teachers to navigate the materials, but should be kept to a minimum to avoid confusion in remembering too many symbols.
- **Appropriate font for students**—This may be stipulated already by government policy.
- **Font size**—Textbooks should have a larger font for younger students. Font size in the teacher’s guide should not be too small to read.
- **PREPARE FOR ILLUSTRATIONS:** This is another essential piece that cannot wait until the content is completed. As soon as possible hire several local illustrators and have them begin working on the illustrations needed for the textbook in particular. Writers at the writers’ workshop should develop illustration briefs to explain what illustrations are needed. The work can begin almost immediately once the briefs are complete.
- **DECIDE ON BLACK AND WHITE VERSUS COLOR:** Decide on color or no color. Color is often more engaging for students and can be used to highlight vocabulary words or indicate specific instructions to teachers. However, color

will cost about 4% more to print each book for a large-scale print run.

Plan, Plan, Plan—Be sure that before any work begins there is a clear plan that includes all steps and sufficient time for each. In particular make sure there is adequate time planned for moving all content into the layout. This process will most likely involve a couple of rounds of review and revision, working closely with graphic designers and the technical team, and can take longer than expected.

Plot out the book—One useful tool is an Excel spreadsheet for the whole guide, much like for the scope and sequence. Laying out in Excel each activity for each day with the script and content will allow you to see how scripts grow shorter over time. This can be very helpful to the graphic designers as well when they go to move content into the layout. It will help track the content for each lesson and ensures consistency across similar activities when you can see the whole book at a one time.

Proofreading—Plan for time to thoroughly proofread the books once the content has been placed in the layout. This is a crucial step to avoid printing any mistakes. If possible hire professional, experienced proofreaders. This should not be rushed as it is easy to overlook small mistakes that will be regrettable after printing.

BE SURE THAT BEFORE ANY WORK BEGINS THERE IS A CLEAR PLAN THAT INCLUDES ALL STEPS AND SUFFICIENT TIME FOR EACH

About the symbols in this guide:

-  Indicates “Red Alert”: Something to be aware of and alert to, because it is a common problem
-  Indicates “Non-negotiable”: a must-have

RESOURCES

Example teaching and learning materials (student books and teacher’s guides) available to download on Funda Wande’s website: <https://fundawande.org/learning-resources>

Cross-country study on teacher’s guides: Effectiveness of Teachers’ Guides in the Global South: Scripting, Learning Outcomes, and Classroom Utilization. <https://www.rti.org/rti-press-publication/teachers-guides-global-south/fulltext.pdf>

Webinar on materials development, including handouts and links to example materials: <https://www.globalreadingnetwork.net/events/resources-teaching-and-learning-early-grade-reading>

Video discussing the materials development process in Ethiopia: <https://www.usaid.gov/news-information/videos/node/151041>

Example teaching and learning materials available to download on RTI’s site: <https://shared.rti.org/resources-by-type>

Article on research based instructional strategies teachers should know <https://www.aft.org/sites/default/files/periodicals/Rosenshine.pdf>

Complete Series of Structured Pedagogy How-To Guides: <https://scienceofteaching.s3.eu-west-3.amazonaws.com/index.html>

TECHNICAL EXPERTISE NEEDED

Expert in structured pedagogy for relevant subjects and materials development to provide training and guidance to the writing team (if the writing team is new at developing materials for a structured pedagogy program)

REFERENCES

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- 2 Benjamin Piper, Yasmin Sitabkhan, Jessica Mejia, and Kellie Betts, K, *Effectiveness of Teachers’ Guides in the Global South: Scripting, Learning Outcomes, and Classroom Utilization* (Research Triangle Park, NC: RTI Press, 2018). <https://doi.org/10.3768/rtipress.2018.op.0053.1805>
- 3 Siegfried Engelmann, Wesley C. Becker, Douglas Carnine, and Russell Monroe Gersten, “The Direct Instruction Follow Through Model: Design and Outcomes,” *Education and Treatment of Children* 11, no. 4 (November 1988): 303–317. https://www.researchgate.net/publication/232426742_The_Direct_Instruction_Follow_Through_Model_Design_and_outcomes
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- 5 Norma Evans, Deepa Srikantaiah, Amy Pallangyo, Mary Sugrue, M., and Yasmin Sitabkhan, *Towards the design and implementation of comprehensive primary grade literacy and numeracy programs* (working paper by the Global Reading Network. Prepared by University Research Co., LLC. (URC) under the Reading within REACH initiative for USAID’s Building Evidence and Supporting Innovation to Improve Primary Grade Assistance for the Office of Education [E3/ED] Washington, DC: USAID, 2019). <https://www.edu-links.org/resources/towards-design-and-implementation-comprehensive-primary-grade-literacy-and-numeracy>.