

Implementation Guide for Mathematics Mini-Modules

Introduction

The mini-modules:

- Provide teachers with knowledge of what early math skills children should learn during the early primary grades (grades 1–3), together with effective strategies for teaching these skills.
- Are designed to be simple and flexible so they can be used by different people (e.g., program implementers, teacher trainers, and teachers) and in different circumstances (e.g., pre-service teacher education, in-service teacher training, and ongoing professional development programs).

Mini-Module Structure and Content

The ten mini-modules cover three main themes, as outlined below.

Chapter 1: Numbers and Quantities	Chapter 2: Foundations of Addition and Subtraction	Chapter 3: Place Value
A) Count B) Compose, decompose, and subitize C) Understand, read and write numbers D) Compare numbers	A) Understand addition B) Understand subtraction C) Apply addition and subtraction	A) Group ones and tens B) Understand the digits of numbers C) Compare two- and three-digit numbers

Each mini-module contains the following sections:

Section	Description
Objectives	Objectives that the mini-module aims to help teachers achieve.
Recommended materials	Teaching and learning materials (e.g., counters, number line) that are recommended.
Illustration of teaching	Image of a student solving a math problem and corresponding reflection questions, highlighting typical errors in student responses.
Ideas to consider	Ideas related to the illustration for teachers to consider.
Activity	A teaching and learning activity for teachers to practice together.
What do children learn about the topic?	A brief description and table of the skills that children should learn with regard to the math topic covered in the module.
Reflection	Questions for teachers to reflect on after completing the module.
Teaching practice	An activity that teachers may complete with a group of students after the module.

Adapting the Mini-Modules to Specific Contexts

The mini-modules can be used with or without adaptation. They can be adapted to align with ongoing training programs, or used to design training opportunities (see Box 1). In addition, the modules can be adapted to align to the content of the local curriculum, local terminology, and local teaching and learning materials (see Box 2).

Box 1. Examples of how the mini-modules can be aligned to training programs

- Teachers can be gathered for in-service training sessions where a facilitator guides them through each section of the mini-modules.
- Facilitators can visit schools and guide teachers at those schools through each section of the mini-modules.
- Teachers can gather for training sessions facilitated by a trainer, where they are given time to read the mini-modules independently and then discuss the content in groups.
- Content from the mini-modules can be integrated into the materials and lectures of a pre-service teacher training program.
- Facilitators can integrate segments of the mini-modules into their existing in-service teacher training program and training materials.

Box 2. Example of adapting teaching and learning materials to context

In some contexts, the 100 chart starts at 1, while in others the chart starts at 0. This is a simple adaptation that can be kept in mind to make the mini-modules more familiar and relevant to teachers.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79
80	81	82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97	98	99
100									

For more details on teaching and learning materials in mathematics instruction, see the Materials Guidance for Numeracy Programs.

Tips Before Getting Started

Below are some tips for facilitators planning to use the mini-modules:

1 PLAN

- The topics featured in the various modules follow learning progressions in early math. If possible, facilitators should time the introduction of the mini-modules to ensure that teachers have an opportunity to learn about progressions before they teach them in the classroom.
- The mini-modules focus primarily on math content and also introduce some pedagogical skills related to the selected math topics. It is likely that implementers will identify other teacher training needs (e.g., classroom management, using technology, etc.). Decisions should be made about when to include mini-modules in the sequence of training and how they can complement other training content.

- Facilitators should adopt a style most beneficial for teachers in the local context. Teachers may be asked to read the mini-modules themselves, or they may be guided through each section by a facilitator. They may work in pairs or groups to complete the reflection and practice activities. Facilitators may need to spend more or less time demonstrating or explaining ideas based on teachers' familiarity with them. The mini-modules do not indicate how much time to spend on each section, as this should be determined based on how they are delivered and the level of support and practice that teachers need.

2 PREPARE

- The mini-modules should be guided by facilitators who have some background in teaching and learning math in primary school, or have been trained by someone with expertise in early math.
- If needed, program implementers may provide facilitators with more structured facilitation manuals and the materials required to implement the mini-modules.
- It is important to ensure that there are enough teaching and learning materials available for teachers to practice with during the mini-module sessions.

3 FOLLOW UP

- It is important to provide follow-up to teachers to support them in integrating what they have learned into their teaching. Depending on the structure of the training program and the resources available, there are different ways to do this:
 - o Facilitators may assess teachers' knowledge and understanding of mini-module content at the end of a session or during subsequent sessions, and spend additional time on problematic topics.
 - o Facilitators may conduct classroom observations to assess whether teachers are applying what they have learned.
 - o Facilitators may co-teach with teachers and coach them on best practices.
 - o Facilitators may organize teacher meetings where teachers gather to share their experiences about how they are applying what they have learned.
 - o Facilitators may follow up with teachers after they complete the "Teaching Practice" activity (located on the last page of each mini-module) with their own class or a group of students. This follow-up could be by text message or via a small-group discussion about the activity at the start of the next session.



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