The Development of Mathematics Textbooks in Myanmar

Takashi Itoh*, Isamu Imahori** , Koji Takahashi**

*Gunma University, Japan **Padeco Co., Ltd,

12. Feb. 2022

Background

2001	Japan has dispatched short-term experts to introduce the Child-Centered-Approach: CCA
2004-2007	The JICA* Project for Strengthening the Child-Centered-Approach phase 1：SCCA1
2008-2011	The JICA Project for Strengthening the Child-Centered-Approach phase 2：SCCA2
2014-2021	The JICA Project for Curriculum Reform and Teacher Education: CREATE

JICA*: Japan International Cooperation Agency

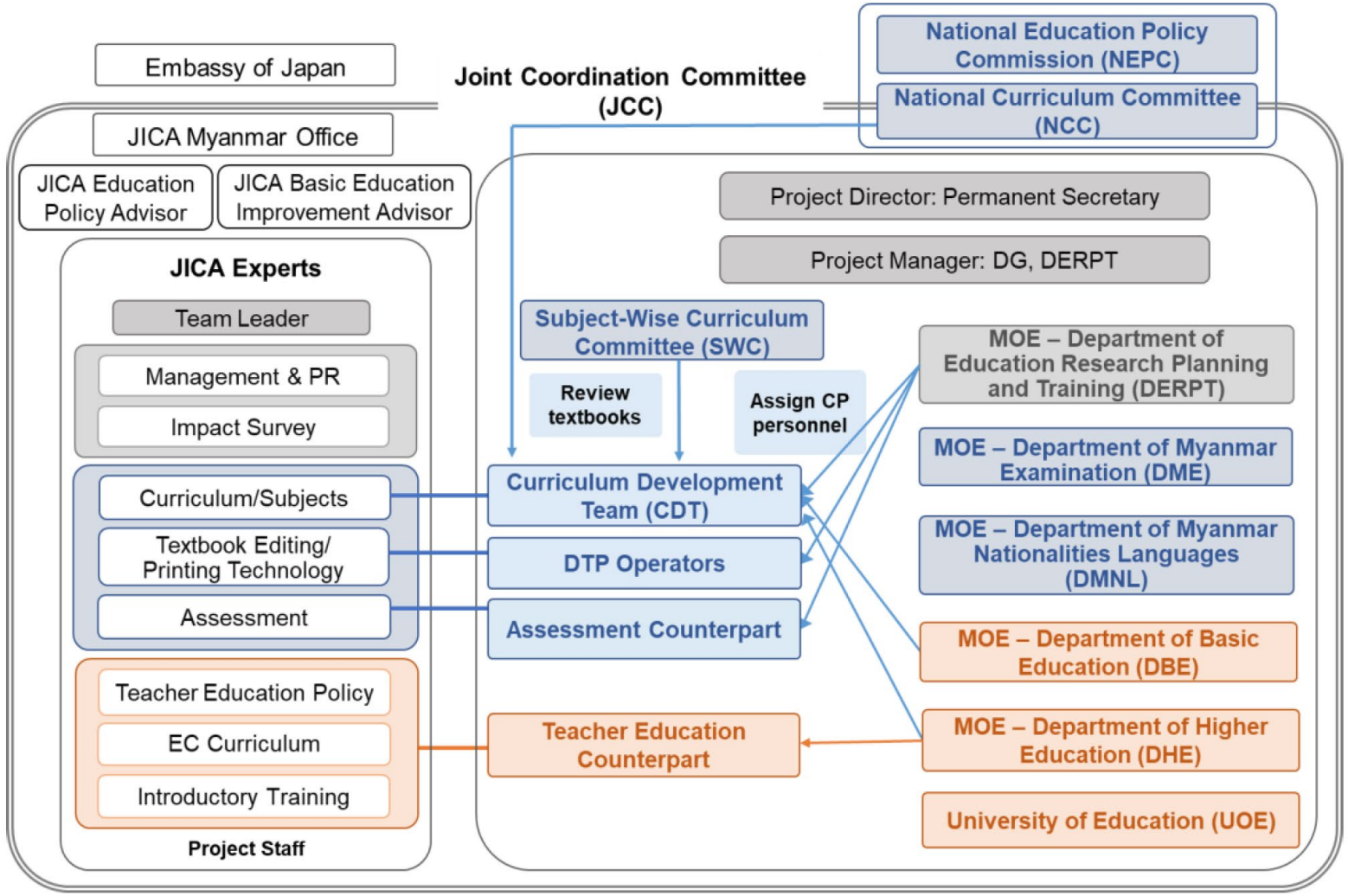
CREATE Project

Goals of CREATE* project are to achieve the following five outputs:

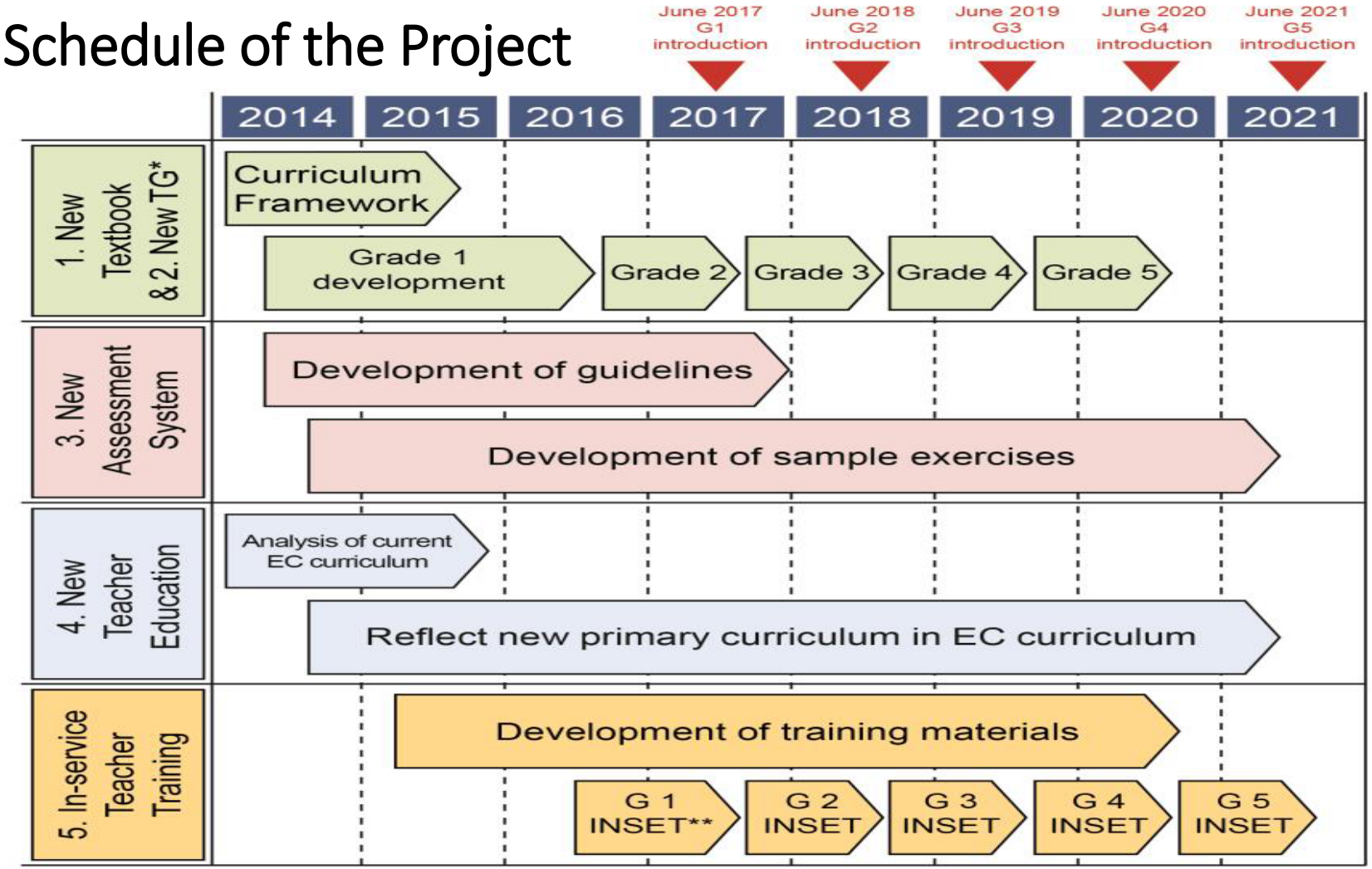
1. The new curriculum framework is developed
2. The new textbooks and teacher's guide are developed
3. The new assessment tools are developed;
4. The new primary curriculum is disseminated to ECs;
5. The dissemination activities of new curriculum are introduced.

CREATE* : Curriculum Reform and Teacher Education

Project Implementation Structure



Schedule of the Project



*TG = Teacher's Guide
**INSET = In-service Training

Issues in Curriculum and Textbooks

Textbooks were not developed based on curriculum frameworks.

Math Textbooks focused more on memorizing and skills than thinking logically, creating and expressing.

Examinations to assess learning achievement were based on rote memorization and knowledge.

Math textbooks had not been revised for 30 years.

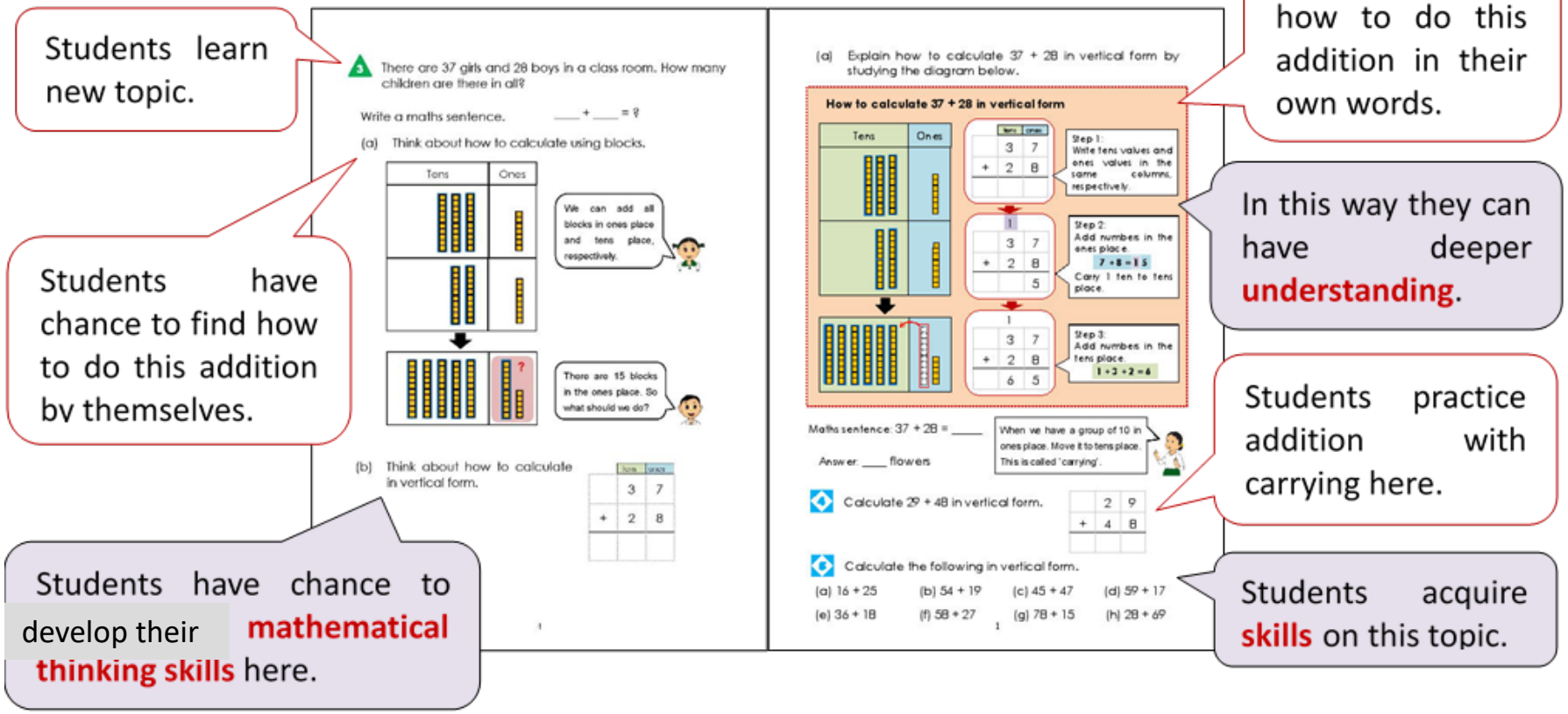
New Mathematics Textbooks

- The problem-solving learning approach is widely introduced.
- Learning activities provide opportunities for students to develop mathematical thinking.
- In the problem solving, students are expected not only to find the answer by necessary calculation but also to explore the strategy for solution using mathematical thinking and various representations.
- In learning activities, students are provided opportunities to develop presentation skills.

The Specific Achievements in the Math Team Project

1. Development of textbooks to promote children's learning
2. Development of teacher’s guides to support new learning
3. Development of the curriculum and textbook revision process

Textbook sample pages (Addition with carrying below 100)



Students learn new topic.

Students have chance to find how to do this addition by themselves.

Students have chance to develop their **mathematical thinking skills** here.

Students explain how to do this addition in their own words.

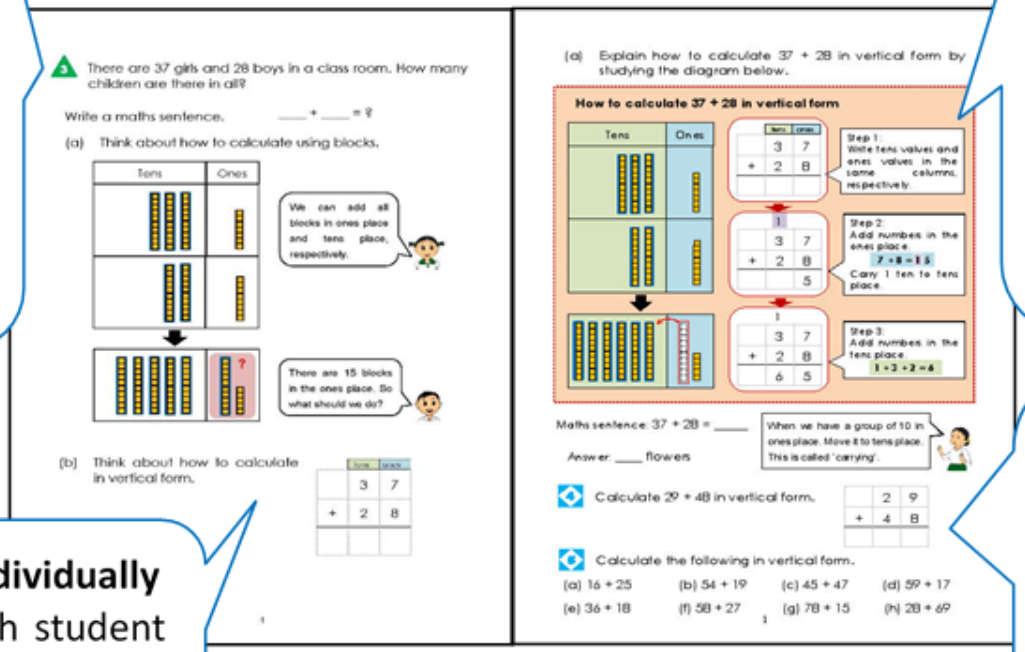
In this way they can have deeper **understanding**.

Students practice addition with carrying here.

Students acquire **skills** on this topic.

Textbook sample pages (Addition with carrying below 100)

Step 1: Posing key question
This key question is directly related to the lesson objective of this lesson.

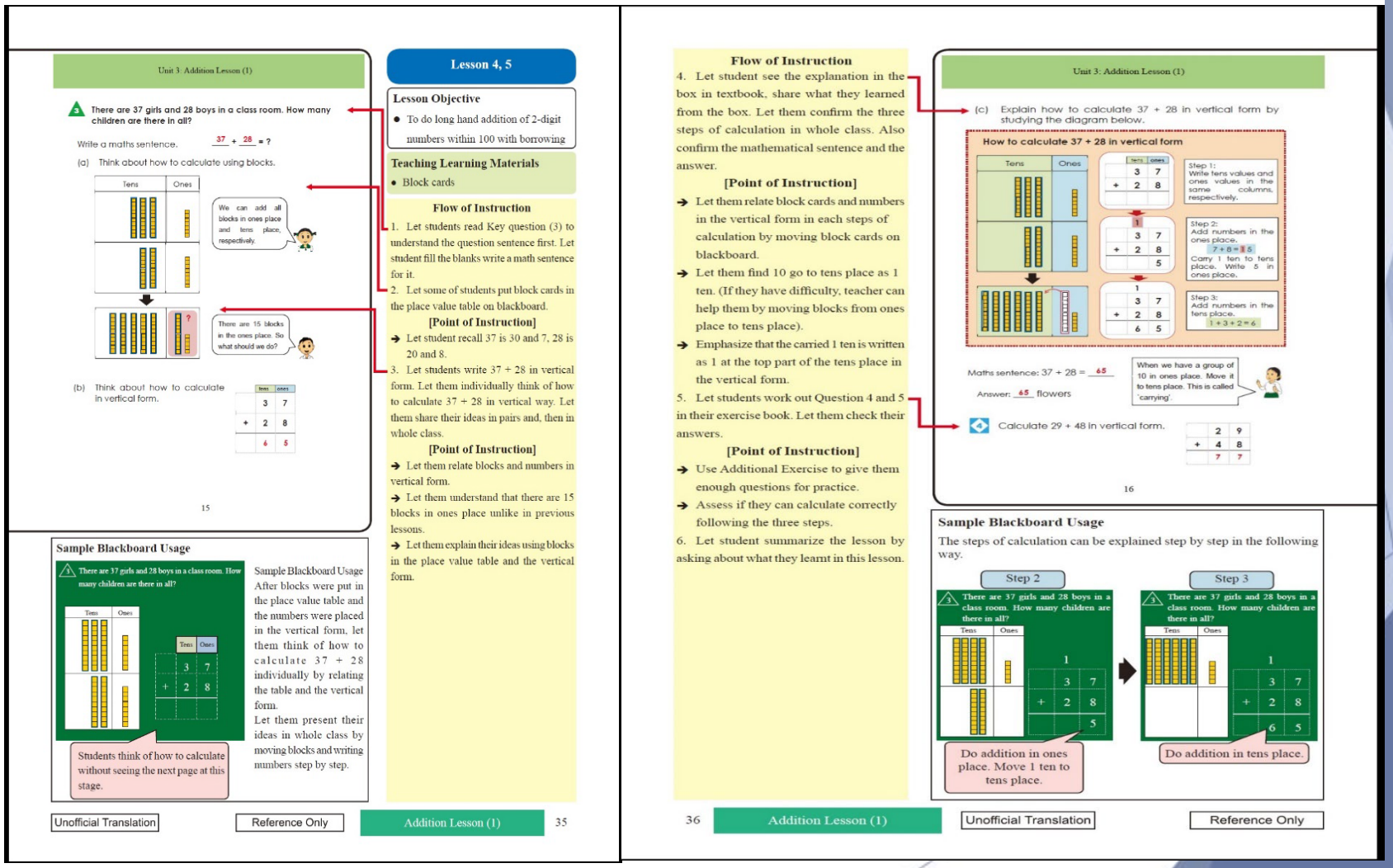


Step 2: Solving Individually
At this stage, each student thinks about how to do this addition individually.

Step 3: Sharing ideas in whole class
Students share and examine their ideas in whole class. Then, they confirm how to do this addition.

Step 4: Confirmation question and summary
Students work out similar questions to confirm their understanding. Then, at the last part of the lesson, they summarize what they learned in this lesson.

Teacher's Guide sample pages (Addition with carrying below 100)



Unit 3 Addition Lesson (1)

3 There are 37 girls and 28 boys in a class room. How many children are there in all?

Write a maths sentence. 37 + 28 = ?

(a) Think about how to calculate using blocks.

Tens | Ones

We can add all blocks in ones place and tens place, respectively.

There are 15 blocks in the ones place. So what should we do?

(b) Think about how to calculate in vertical form.

tens	ones
3	7
+ 2	8
6	5

15

Lesson 4, 5

Lesson Objective

- To do long hand addition of 2-digit numbers within 100 with borrowing

Teaching Learning Materials

- Block cards

Flow of Instruction

1. Let students read Key question (3) to understand the question sentence first. Let student fill the blanks write a math sentence for it.
2. Let some of students put block cards in the place value table on blackboard.

[Point of Instruction]

➔ Let student recall 37 is 30 and 7, 28 is 20 and 8.

3. Let students write 37 + 28 in vertical form. Let them individually think of how to calculate 37 + 28 in vertical way. Let them share their ideas in pairs and, then in whole class.

[Point of Instruction]

➔ Let them relate blocks and numbers in vertical form.

➔ Let them understand that there are 15 blocks in ones place unlike in previous lessons.

➔ Let them explain their ideas using blocks in the place value table and the vertical form.

Sample Blackboard Usage

Sample Blackboard Usage
After blocks were put in the place value table and the numbers were placed in the vertical form, let them think of how to calculate 37 + 28 individually by relating the table and the vertical form.
Let them present their ideas in whole class by moving blocks and writing numbers step by step.

Unofficial Translation | Reference Only | Addition Lesson (1) 35

Flow of Instruction

4. Let student see the explanation in the box in textbook, share what they learned from the box. Let them confirm the three steps of calculation in whole class. Also confirm the mathematical sentence and the answer.

[Point of Instruction]

➔ Let them relate block cards and numbers in the vertical form in each steps of calculation by moving block cards on blackboard.

➔ Let them find 10 go to tens place as 1 ten. (If they have difficulty, teacher can help them by moving blocks from ones place to tens place).

➔ Emphasize that the carried 1 ten is written as 1 at the top part of the tens place in the vertical form.

5. Let students work out Question 4 and 5 in their exercise book. Let them check their answers.

[Point of Instruction]

➔ Use Additional Exercise to give them enough questions for practice.

➔ Assess if they can calculate correctly following the three steps.

6. Let student summarize the lesson by asking about what they learnt in this lesson.

Unit 3: Addition Lesson (1)

(c) Explain how to calculate 37 + 28 in vertical form by studying the diagram below.

Maths sentence: 37 + 28 = 65

Answer: 65 flowers

When we have a group of 10 in ones place. Move it to tens place. This is called 'carrying'.

Calculate 29 + 48 in vertical form.

	2	9
+	4	8
	7	7

16

Sample Blackboard Usage

The steps of calculation can be explained step by step in the following way.

36 Addition Lesson (1) | Unofficial Translation | Reference Only

REMAINING CHALLENGES

- The lack of human resources who have both academic degrees in math education and teaching experience in schools as math teachers.

- While many topics are added to the new primary mathematics curriculum, textbooks and a number of new teaching methods are introduced, it seems that teachers need more practice and experience to digest those new items.

Thank you so much!

ကျေးဇူးတင်ပါတယ်