

## Immersion Unit Plan Framework

### CONTEXT:

#### **Program Particulars**

**Program Model (one-way/two-way; total/partial, etc.):** Early, total, one-way foreign language immersion

**Immersion Language(s):** Mandarin Chinese

**Grade Level:** First grade

#### **Student Characteristics**

**L2 Proficiency and Literacy Levels:**

Novice mid/high level in speaking, novice low/mid level in reading

**L1 Literacy Level:** Variable, mostly beginning readers

**Ethnolinguistic Background:** Native speakers of English, Euro-American and Asian American

#### **Assumptions About What Students Already Know/Understand and Can Do**

##### Essential Skills

##### Knowledge/Understandings

Count to 100 by 2's, 5's and 10's Add numbers 0-10 Sort objects to represent groupings for addition stories Tell someone the day, month and season in which they were born Write numbers using Chinese characters Circulate around classroom and interact with other students using Mandarin only Can infer meaning when given key words and other context clues	Numbers are symbols used in math that represent objects and ideas Are familiar with tens and ones as place value Familiar with the concept of “strategy” and understand that it is a way to solve a number problem Visuals help represent and solve math problems Can identify months and seasons and the order in which they happen
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### DESIRED RESULTS:

#### **Big Idea and Unit Theme:**

#### **Properties of Addition: Commutative and Associative**

#### **Key Content Concepts:**

Property, strategy, addition, number, equation, equals, sum, addend, number bond

## Targeted National and State Standards

<u>State Content Standards (Minnesota)</u>	<u>National FL Standards (ACTFL)</u>
<p><b>Learning Area: Math</b> <b>Content Standard: Number and Operation</b> (1.1.2.1) Use words, pictures, objects, length-based models (connecting cubes), numerals and number lines to model and solve addition and subtraction problems in part-part-total, adding to, taking away from and comparing situations.</p> <p><b>Content Standard: Algebra</b> (1.2.2.1) Represent real-world situations involving addition and subtraction basic facts, using objects and number sentences.</p> <p><b>Learning Area: Social Studies</b> <b>Content Standard: Citizenship</b> Civic values: Explain the importance of participation and cooperation in a community (e.g., playing with and helping others) and explain how people can make a difference in others' lives.</p> <p><b>Content Standard: Historical Skills</b> Concepts of Time: Use terms for concepts of historical time, e.g., days of month, months of year, seasons, etc.</p>	<p><b>COMMUNICATION</b> <b>Communicate in Languages Other Than English</b> Standard 1.1: Students engage in conversations, provide and obtain information, requesting assistance Standard 1.2: Students understand and interpret spoken language on a variety of topics Standard 1.3: Students present information, concepts, and ideas to an audience of listeners on a variety of topics.</p> <p><b>CONNECTIONS</b> <b>Connect with Other Disciplines and Acquire Information</b> Standard 3.1: Students reinforce and further their knowledge of other disciplines through the foreign language.</p> <p><b>CULTURES</b> <b>Gain Knowledge and Understanding of Other Cultures</b> Standard 2.1: Students demonstrate an understanding of the relationship between the practices and perspectives of the culture studied.</p>

### Unit-Level Goals:

Possible Enduring Understandings and Essential Questions:

*Students will understand that...*

1. When two numbers are added, the sum is the same regardless of the order of the addends. For example,  $4 + 2 = 2 + 4$ . (commutative property)
2. When three or more numbers are added, the sum is the same regardless of the grouping of the addends. For example,  $(2 + 3) + 4 = 2 + (3 + 4)$ . (associative property)
3. A number bond is a number and the parts that combine to make it, e.g., 5, 2, 3.
4. Knowing number bonds helps to understand simple addition.
5. Strategies help us to do addition in real life.
6. When we play with and help others, we contribute to the community.

## Knowledge and Skills

<i>Students will know/understand...</i>	<i>Students will be able to....</i>
<ul style="list-style-type: none"> <li>• The concept of parts and whole (number bond);</li> <li>• Order of addends (parts of whole) does not change the sum;</li> <li>• The relationship between number bonds and simple addition up to 10;</li> <li>• Number sentences are used to represent story problems and real-world events;</li> <li>• Number sentences are used to represent properties of addition (commutative and associative);</li> <li>• Properties of addition are always true.</li> <li>• Playing with and helping others makes the community stronger.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify the 3 numbers that make up various number bonds with numbers 0-10;</li> <li>• Sort unifix cubes in groups to solve story problems about simple addition with numbers 0-10;</li> <li>• Write two addition sentences for a given number bond and verbally express them in Chinese;</li> <li>• Graphically represent a story problem using number bonds, pictures and addition sentences;</li> <li>• Make suggestions, express a judgment, respond to questions, ask for help, and ask permission in Chinese.</li> </ul>

### **EVIDENCE:**

#### **Unit Level Summative Performance Assessment Task(s) and Other Evidence:**

##### Details and Description of Procedures:

Teacher interviews students in pairs to learn how students construct for themselves their own strategies for solving addition story problems. During the interview teacher will check for understanding of commutative and associative properties, accurate use of the ( 两 ) + measure particle ( 只 ) construction preceding a certain group of nouns with the number 2, and ability to write and say a number sentence that corresponds to an addition story. Unifix cubes, blank paper, pencils will be provided to students. The students need to use different strategies to solve the problems and can work together to complete the task.

##### Story problems:

1. There are 8 birds building a nest in a tree. Then 2 birds fly in to help. How many birds are there in the tree altogether?
2. Chen and Tom bounce the Ping Pong ball four times. Susan and Lin bounce the Ping Pong ball three times. Mei and Robert bounce it two times. How many bounces were there altogether?

With each story problem teacher observes and asks students to show her how they count, one by one, two by two, using unifix cubes, or counting mentally. She also asks students to write and read aloud a number sentence that corresponds to each addition story. For example,  $8 + 2 = 10$  (Eight birds + two birds = 10 birds altogether.)

Interview questions:

Can you count in another way? Which way do you think is the fastest one? What happens to the number sentence if I put A first and B second?, If I put C first and A second and B third?, etc.

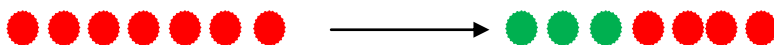
### Professional Curriculum Development References and Resources:

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- National Standards in Foreign Language Education Project. (1999, 2006). *Standards for foreign language learning in the 21st century*. Lawrence, KS: Allen Press, Inc.
- Rosenbaum Foundation. (2001). *Singapore Primary Mathematics Teachers' Guide*, 3<sup>rd</sup> Ed. Chicago, IL.
- Snow, M. A., Met, M., & Genesee, F. (1992). A conceptual framework for the integration of language and content instruction. In P. A. Richard-Amato & M. A. Snow (Eds.), *The multicultural classroom: Readings for content area teachers* (pp. 38). New York: Longman.
- Wiggins, G., & McTighe, J. (2005). *Understanding by Design* (Expanded 2nd Ed.), (Chapter 1: Backward design, pp. 13-34). Alexandria, VA: Association for Supervision and Curriculum Development.

### Manipulatives for Math Content:

1. Unifix cubes --- Use for count one by one, two by two, five by five, ten by ten.
2. Double-color plastic pieces --- Use for understanding number-bond. For example: To teach the number-bonds for the number 7 ( $7=1+6$ ,  $7=2+5$  and  $7=3+4$ ), ask students to flip one piece, two pieces, three pieces. (让学生翻转一片,两片,三片.....没有被翻转的几片所显示的颜色与翻转的就不一样,由此,学生可以清晰地看出7可以分成几和几。) The double-color pieces are red on one side and green on the other, so when students flip them they become a contrasting color.

**Sample illustration:  $7=3+4$  ( $7=4+3$ )**



Through practice with these manipulatives, students will deepen understanding of the concept of number-bond and how to use it to solve addition problems.

## Immersion Lesson Plan Framework

### DESIRED RESULTS:

#### Lesson

#### **Enduring Understandings:**

- When two numbers are added, the sum is the same regardless of the order of the addends. For example,  $4 + 2 = 2 + 4$ . (commutative property)

#### **Materials needed**

- Vocabulary cards, picture cards, chart paper, markers, Ping-Pong balls, video clip of Ping Pong match in China, student worksheet (see appendix), pencils, unifix cubes

**Time Frame:** 3 days

#### **Learning Objectives**

#### **Students will:**

Content:

- Develop initial understanding of the commutative property (When two numbers are added, the sum is the same regardless of the order of the addends. For example,  $4 + 2 = 6$ ;  $2 + 4 = 6$ ;  $4 + 2 = 2 + 4$ )

Culture:

- Become familiar with Ping Pong as one of the Chinese people's favorite sports

Language:

#### Content-Obligatory

- Express addition stories with number sentences ( a 加 b 等于 c ) using the words “加 (plus),” 等于 (equals),” and “一共 (altogether)” with the numbers 1-10.
- Express the sum of an addition story using the sentence, "There are (number) (noun) altogether." (一共有.....)
- Accurately replace the number “二 (2)” with character 两 to express quantity of a noun, e.g., 两只兔子” (two bunnies), “两只小鸟” (two birds), “两只小狗” (two puppies), “两只小猫” (two kittens), “两只熊猫” (two pandas), etc.
- Use appropriate measure particle 只 before nouns in the small, cute animal category, e.g., “3 只小鸟 (3 birds), 5 只小狗 (5 puppies), 7 只老鼠 (7 mice), 9 只小老虎 ( 9 baby tigers ) , etc.
- Identify the order of addends in an addition sentence using ordinals such as “第一” (first), “第二” (second), and “第三”(third), or other sequencing adverbs (e.g., “下一个”(next), “然后” (then), etc.

- Compare and contrast the relationship between the order of the addends and the sum in an addition sentence using the modal helping verbs 可以/能 (can)、应该 (should) in a compound sentence and one of two options for the conjunction “but”(但/但是), for example, a 和 b 的顺序可以改变, 但是和应该不变 (The order of “a” and “b” can change, but the sum should not change).

### Content-Compatible

- Provide encouragement, direction and verbal support to a partner or group member with phrases such as 加油! (Come on!), 干得好! (Way to go!), 好球! (Nice hit!), 加油! (Work harder!), 注意! (Pay attention!), 小心! (Be careful!), etc.
- Identify sporting activities that students are familiar with using the pronoun 我 (I) with the verb 玩 (play) and various sporting activities, e.g., 棒球 (baseball), 足球 (soccer), 曲棍球 (hockey), 橄榄球 (football), etc.
- Review and use known vocabulary for numbers 1-31, months of the year, seasons and small, cute animals, such as 兔子 (rabbits)、鸟 (birds)、猫 (cats)、狗 (dogs)、老鼠 (mice), etc.
- Accept an invitation with the language chunk, “当然可以! 我很愿意! (Sure, I can! I am glad to.)”

### Learning Strategies:

*Use graphic organizers:* Create a visual representation of the addition story to assist problem solving

*Find/apply patterns:* Identify the use of measure particle 只 that precedes nouns that identify small, cute animals, and the use of the character 两 instead of “二 (2)” when counting things.

*Cooperate:* Work in pairs and small groups to solve addition stories

## **LEARNING EXPERIENCES/INSTRUCTION:**

### **Day One: Preview Phase—“into” activities**

*Introduce game of Ping Pong as much enjoyed cultural practice in China. Play quick warm-up of game of bouncing Ping Pong balls in pairs and counting and recording the number of bounces. Teacher previews/reviews phrases of encouragement or suggestions for improvement so that children can verbally support their partners. Debrief game and invite reflection on personal use of Chinese. Introduce concept of commutative property of addition.*

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#### Details and Description of Procedures:

*Introduce cultural practice and exclamatory phrases of support.*

Show a short video clip of Chinese children playing Ping Pong and cheering, ask students if they are familiar with this sport and have played it. Briefly talk about how much Chinese people love playing Ping Pong. Ask children what some of their favorite sports to play are, at school? At home? With friends? Teacher records this vocabulary on chart paper to reference later.

Ask students what kinds of things people say and do to encourage them when they are playing a sport. For example, “Way to go!” “Nice hit!” Tell the children that you want them to listen carefully for the words used to encourage the Ping Pong players in the video and then show the video clip a second time. Once the video has ended, ask students to tell a partner what words or phrases of encouragement they heard. Then invite students to share these words with the whole class as the teacher records their responses on large vocabulary cards. Add a few additional words or phrases to provide sufficient variety if needed. Display these phrases for the duration of this lesson.

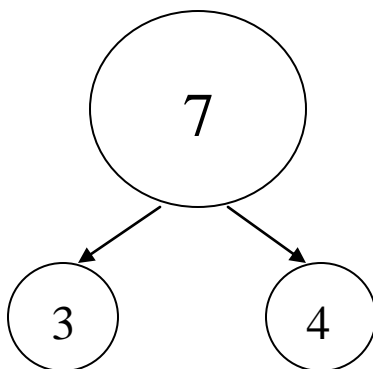
Use vocabulary cards to review exclamatory language typical of sport competitions with the children, e.g., 加油! (Come on!), 干得好! (Way to go!), 好球! (Nice hit!), 加油! (Work harder!), 注意! (Pay attention!), 小心! (Be careful!), etc.

*Model math game activity.*

Ask children if they would like to play a bouncing game with Ping Pong balls. The goal of the game is to see how many times a group of four students can pass the ball back and forth without dropping it or letting it bounce more than once. Model for the children how to play the game with a student volunteer: in pairs, one player gently tosses the Ping Pong ball to their partner allowing for one bounce only before the partner catches the ball; the pair tries to keep the ball volleying back and forth as long as possible without dropping the ball or having it bounce more than once).

This activity takes place in groups of four (two pairs in each group) so the teacher invites two more student volunteers to continue the modeling. Teacher explains, then demonstrates, that the pair who is bouncing the ball will count the number of bounces out loud; at the same time, the other pair will encourage these students to do their best using the phrases just introduced. Once the volley has ended, the players write their score in the appropriate circle on the worksheet (see graphic below). Then the pairs switch roles and play again.

Once both pairs' scores are recorded in the smaller circles, the group works together to find the sum of both scores and the student with the earliest birthday records the sum in the large circle on the worksheet.



$$3 + 4 = 7$$

Next, this student writes a number sentence with this same information ( $x + y = z$ ) just below the graphic (see example above). Lastly, this student's partner will write the group's number sentence on the chart paper hanging in the front of the room.

*Prepare students for math game.*

Teacher asks students, "How could you find out which member of a group has the lowest birthday number?" Elicit from students a sample of questions they could ask to find this out. If necessary, model a question or two and write them on the whiteboard with a picture cue next to the question. Possible questions: 你的生日在什么时候?

(When is your birthday?), 你的生日在哪一天? (Which day of the month is your birthday?), 你的生日在哪个月? (Which month do you have a birthday?), etc.

Teacher asks students to get into groups of four and figure out whose birthday comes first. Then the teacher tells the group that the student with the earliest birthday (lowest number, closest to January) will choose a partner and they will play the game first. They are also responsible for getting one Ping Pong ball from the materials basket for their group. The remaining two students will play next and are responsible for getting the math worksheet and a pencil for recording the group member names and scores.

Before beginning the game, teacher quickly reviews the vocabulary of encouragement and direction (e.g., 加油! (Come on!), 干得好! (Way to go!), 好球! (Nice hit!), 加油! (Work harder!), 注意! (Pay attention!), 小心! (Be careful!), etc. with the vocabulary cards. S(he) then reminds the children to count in Mandarin while bouncing the ball and to encourage their group members using the new phrases. She also tells the children that s(he) will observe the play and listen for groups who are able to use only Chinese for this activity.

*Play the game.*

First, the teacher gives the groups a few minutes to practice bouncing the ball. Teacher then gives a signal when it is time to start the game. Each pair of students plays the game, records their scores and together the group finds and records the sum. One student will also write the group's number sentence on the class chart paper. While students are playing, teacher circulates and gives students who are using only Chinese some words of encouragement. After the game is played, teacher collects the Ping Pong balls and the math worksheets.

*Discuss the game and its findings.*

Teacher gathers students around the chart paper for a discussion of the class findings. First, s(he) invites students to pause a moment and think about the amount of Chinese they spoke during the activity. S(he) asks the children to show her with one hand on their chest a number between 0-5 (fist to five) how much Chinese they used. She then comments on what she observed about students' language use during the activity.

She then invites one student to use a pointer and lead the whole group as they read the 6-7 number sentences aloud, for example, “3+4一共等于7. (Three + four = 7 bounces altogether.)” Once they finish, the teacher computes the class' total number of bounces and offers congratulations with “干得好 (Way to go)!” ) She then invites the students to read the number sentences together again. This time they are encouraged to hold up the corresponding number of fingers for each number as they say it, and make a big circle in the air with one finger each time they say the word “altogether.”

*Call attention to the math concept in focus: the commutative property.*

Teacher asks students to look at all the number sentences on the chart paper and talk with a partner about what they notice. Teacher then invites individual students to share with the whole class what they noticed about the number sentences. During this debriefing the teacher ensures that any incorrect number sentences are discovered and changed. (Possible questions for students: 这些句式相同的是什么? 不同的是什么? 你还注意到什么? (How are these number sentences the same? Different? What else do you notice?). Teacher also calls attention to any examples on the chart

paper of the commutative property if they exist. If not, teacher circles one of the number sentences from the chart paper to exemplify this concept. For example,  $4 + 6 = 10$ .

Teacher writes each of the three numbers (4, 6, 10) on a separate whiteboard and calls on three student volunteers to come to the front and hold one of the three whiteboards. These students are asked to put themselves in order according to the events of a story that the teacher will tell. The student whose number is reported first stands in the left most position; the student, whose number is reported last and holds the sum, on the right. The teacher also invites two other students up to the front to act as “number sentence interpreters” for the story. As interpreters, they will take turns listening carefully to the story, constructing a number sentence about it and writing it on the large whiteboard for all to see. Teacher reminds the remaining students that their job is to observe and see if they agree with what their classmates are doing.

Teacher tells a short story about two students playing the Ping Pong game. For example,

开始，Jane拍了4下，接着，Sarah拍了6下，他们一共拍了10下。  
(First, Jane made four hits. Next, Sarah made six hits. Altogether, Jane and Sarah made ten hits.)

Teacher pauses and asks students who are seated and watching, “你注意到刚才的故事和三个学生的位置有什么关系？白板上的句式和三个学生的位置有什么关系？(What do you observe about the relationship between the addition story and the students’ positions? What do you observe about the relationship between the number sentence on the whiteboard and the three students’ positions.)”

Then the teacher tells the story a second time. This time Sarah’s score is reported first.

开始，Sarah拍了6下，接着，Jane拍了4下，他们一共拍了10下。  
(First, Sarah made six hits. Next, Jane made four hits. Altogether, Sarah and Jane made ten hits.)

After pausing for student volunteers to complete their tasks, the teacher asks, “在这些句式中，哪些改变了，哪些没变？(What about the number sentences changed and what did not change for these two stories?), 两个数相加，这两个数的顺序会改变和吗？(When two numbers are added together, does the order of these numbers change the sum?) 如果是，怎么改变的？(If so, in what ways?) Possible student observations: “两个都等于10。(Both equal 10.)” “在这个句式里，第一个数字是4，在这个句式里，第一个数

字是6. (In this number sentence [pointing to the numbers on the whiteboard] the first number is 4; in this number sentence the first number is 6.)” “第一个数字和第二个数字的位置改变了，但是最后的数字没有变. (The positions of the first number and the second number are changed, but the last number does not change.)” Teacher guides student responses to the awareness that  $x$ 加 $y$ 等于 $y$ 加 $x$  ( $4 + 6 = 6 + 4$ ).

### **Day Two: Focused Learning Phase—“through” activities**

*In pairs students will work together to visually display the story problems told by the teacher in two ways. One student uses unifix cubes to show each of the two addends in the story; the other student constructs a number sentence on a small whiteboard. Teacher invites students to tell a story for the class to interpret.*

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#### Details and Description of Procedures:

*Interpret an addition story in two different ways.*

Teacher asks students to find a partner for the next activity. S(he) tells the group that they are going to work together as story interpreters. Students will interpret each story problem told by the teacher in two different ways: 1. By counting and sorting unifix cubes according to the story, and 2. By writing a number sentence on a small student whiteboard. Teacher tells students that the one who is wearing the most red today will interpret the story by counting and sorting unifix cubes. The other partner will use their personal whiteboard to interpret the story by writing a number sentence. Next, they are given a chance to stand up and get the necessary materials.

Teacher shows picture cards and tells a short story that involves addition. Students are instructed to listen carefully and recreate the story problem by counting and sorting the cubes, or by writing a number sentence on the whiteboard.

四只兔子在拔萝卜，他们拔不出来。另外两只兔子过来帮忙，一共有多少只兔子在拔萝卜？(Four rabbits are pulling on a radish. They cannot pull it out. Two more rabbits come to help them. How many rabbits are pulling the radish altogether?)  
(As s(he) tells the story, the teacher shows the vocabulary card 一共 [altogether] and makes a big circle with her finger as she says the word.)

The teacher gives student pairs a little time to interpret the story problem and encourages them to check each other's work to make sure that both interpretations make sense. As students are working together, the teacher circulates and asks questions to assist the students' work. Then the teacher invites one pair of students to share their work. First, the student with the unifix cubes is asked to retell the story

while showing the cubes. For example, “四只兔子在拔萝卜。另外两只兔子过来帮忙。一共有6只兔子在拔萝卜。(Four rabbits pull the radish. Two rabbits come to help. Altogether, six rabbits pull the radish).” Then the teacher asks the other partner to read the number sentence they wrote. For example, “ $4 + 2 = 6$ .” As the student shares the number sentence, the teacher writes it on the whiteboard for all to see. S(he) then checks with the class to see if they agree or disagree with the number sentence s(he) has written, or if anyone had another way of writing it.

*Draw student attention to use of the unique character 两 for counting 2 of something and provide focused practice with relevant vocabulary.*

The teacher now writes out “四只兔子 (four rabbits),” “两只兔子 (two rabbits)” and “6只兔子 (six rabbits).” 你还注意到什么? 你还注意到什么? S(he) asks students, 这几个数字有什么不同? 哪个? 你还注意到什么? (Do any of the numbers seem different? Which one(s)? In what ways? What else do you notice?)

The teacher invites noticing of the way the number two changes to 两 when it is modifying a noun as well as the use of measure particle 只 before each noun. S(he) makes reference to the list of small, cute animals hanging in the room and indicates that all of these words use the measure particle 只.

Next, the teacher provides several examples of the 二 (2) → 两 character change when counting and the consistent need for the measure word 只 before this group of nouns, e.g., 两只小鸡 ) (two chicks), 两只小鸟” (two birds), “两只小狗” (two puppies), “两只小猫” (two kittens), “两只熊猫” (two pandas), etc. To practice the appropriate language when counting 2 of something, the teacher holds two cards next to each other (one is a number card (1-10) and the other is a picture of one of the baby animals from the list). S(he) asks the students individually and as a group, “你们注意到了什么? (What do you see?)” Students will respond, “3 只小鸟 (3 birds), 2 只小猫 (kittens), 5 只小狗 (puppies), 2 只小鸡 (chicks), 7 只老鼠 (mice), 9 只小老虎 ( baby tigers ) , 2 只兔子 (bunnies), etc.” This activity could become a learning center activity to promote accuracy with these linguistic features throughout the unit.

*Interpret story problems and demonstrate understanding of commutative property.*

Teacher helps students prepare for another story problem by instructing the students to erase their whiteboards and put all unifix cubes together in one group again. Once students are ready, teacher tells a new story, asks them to listen carefully and then interpret the story as before using either unifix cubes or a number sentence.

两只兔子在拔萝卜，他们拔不出来。另外四只兔子过来帮忙，一共有多少只兔子在拔萝卜？(Two rabbits are pulling on a radish. They cannot pull it out. Four more rabbits come to help them. How many rabbits are pulling the radish altogether?) [Once again, the teacher shows the vocabulary card 一共 [altogether] and makes a big circle with her finger as she says the word.]

The teacher asks another pair of students to show and read their number sentence out loud. For example, “二加四等于六。(Two plus four equals six.)” The teacher writes this number sentence on the board. Then the teacher asks the partner with the unifix cubes to retell the story while showing the cubes. For example, “两只兔子拔萝卜，另外四只兔子过来帮忙。一共有6只兔子在拔萝卜。(Two rabbits pull the radish. Four more rabbits come to help. Altogether, six rabbits pull the radish.)”

Now both number sentences are displayed on the whiteboard:  $4 + 2 = 6$  and  $2 + 4 = 6$ . Teacher invites students to share their observations about these addition sentences. “在这两个故事中，哪些改变了，哪些没变？(What changed and what did not change for these two stories?) 两个数相加，这两个数的顺序会改变和吗？如果是，怎么改变的？(When we add numbers together, does the order of the numbers being added change the sum? If so, in what ways?) Teacher guides student responses again to the awareness that  $x$  加  $y$  等于  $y$  加  $x$  ( $4 + 2 = 2 + 4$ ).

This story problem activity is repeated and the pairs swap roles to give each student an opportunity to interpret with manipulatives and number sentences. The next story:

男孩吹了3个肥皂泡，女孩吹了5个肥皂泡，他们一共吹了几个肥皂泡？  
(The boy blew three soap bubbles. The girl blew five soap bubbles. How many bubbles did they blow altogether?) As before, the teacher shows the vocabulary card 一共 [altogether] and makes a big circle with her finger as she invites students to say the word.

Now the teacher asks if any students would like to tell a similar story of their own to the class. The teacher assists student volunteers with the story and again debriefs the unifix and number sentence interpretations with the group. Teacher shows students the sentence card “第一个数字和第二个数字的位置改变了，但是最后的数字没有变 (The positions of the first number and the second number can change, but the sum should not change.)” and asks, “两个数相加，这两个数的顺序会改变和吗？(If the order of numbers being added changes, does the change affect the sum?) Students say, “和没有变！(No, the sum doesn't change!)”

### **Expansion Phase—“beyond” activities**

Each student will draw a picture that tells an addition story to contribute to a whole class storybook about addition stories and helping and playing together. On the back of the picture the student will write two possible number sentences for their story ( $a + b = c$  and  $b + a = c$ ). Students will also write two additional number sentences replacing the Roman numbers with Chinese characters. This makes four sentences total (two with Roman numbers and two with characters). Students will need to limit the topics to stories about small, cute animals (a category of nouns preceded by measure particle 只) and the numbers 1-10. They will also be expected to convert 2 to 两 when counting with the nouns. By writing the number sentences on the back of the picture and not underneath the picture, this book will be able to be used independently by students to review the commutative property, the use of 两 for 2 when counting and use of measure particle 只 before nouns that fit the category of small, cute animals.

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#### Details and Description of Procedures:

*Making connections among various activities and key concepts introduced in the lesson.*

Teacher gathers students around the chart paper where the Ping Pong ball game results were recorded. She asks the students to recall the game and the stories they have heard so far (bouncing the ball, pulling the radish, and blowing bubbles) and asks them what these stories have in common. Here students may mention the commutative property (i.e., order of addends doesn't change the sum) or that the characters are playing together and helping each other. All student responses are affirmed, and the teacher assures that students see the common theme of helping and playing and how these behaviors are important for creating a community (e.g., family, classroom, school, neighborhood, church, etc.).

*Preparing students for making a class book of addition stories.*

Teacher shows the students a blank class book where the students will add new pages of the stories they are about to draw and write. She tells them they will be making up addition stories using numbers from 1-10 about different baby animals playing together or helping each other. They review the picture poster and list of small, cute animals that use the measure particle 只 already posted in the classroom.

The teacher uses the Ping Pong ball game as an example. She thinks aloud and draws the picture that tells an addition story. For instance, “开始, Sara 拍了5下, 接着, Mei 拍了4下, 他们一共拍了9下. (First, Jane made four hits. Next, Sarah made six hits. Altogether, Jane and Sarah made ten hits.)” Teacher draws 5 balls and puts a box around them. Then s(he) draws 4 balls and puts a box around them. Underneath these pictures s(he) counts the objects in each box and writes the corresponding number sentence  $5 + 4$

= 9. “现在，如果我改变两个分数的位置，我知道和不会改变. (Now, if I change the positions of scores, I know the sum will not change. So I can also write:  $4 + 5 = 9$ .)”

The teacher and students revisit the list of sporting activities and games that were discussed earlier in the lesson and asks if there are any others to add that the animals in their stories might play. Then they brainstorm ideas of ways different animals might help each other similar to the radish story (e.g., birds helping each other build a nest, dogs and cats helping each other chase a mouse, etc.). The teacher records the students' ideas on the board.

The teacher demonstrates one more example, this time using baby animals in a story and picture. S(he) intentionally uses the number 2 to call students attention to the unique way that this number changes when counting something, e.g., 二 → 两 . As an example,

三只小鸟在建一个窝，但是冬天之前他们不能完成，另外两只小鸟过来帮忙，一共有多少只小鸟？(Three birds are building a nest. They cannot finish it before winter comes. Two more birds come to help. How many birds are there altogether?)

*The teacher shows the students what to do when they finish their page for the book.*

Students are to read their story to three classmates who have also completed their pages before reading it to the teacher. Each listener initials the back of the page if, in their estimation, it has been read correctly and offers their classmate a phrase of encouragement and support. The teacher takes her example page and approaches one student. “你能帮我听听我的故事吗？ Could you please help me and listen to my story?” the teacher asks. The student is guided to respond, “当然可以！我很愿意！” (Sure, I can! I am glad to.) The student who listens is encouraged to offer each reader a phrase of encouragement and support to the teacher and is then asked to write his/her initials on the back of the page. The teacher says thank you and goes to find another listener. After the third reading, the teacher reminds the students that they are now ready to read their story to one of the teachers.

Later that day and during the following week, the class revisits the completed class book and takes turns reading from it and solving the addition story problems.

*Differentiation:*

Extra support: Students use the pre-printed worksheets to tell a story, write the number sentences and make a page for the class book.

Challenge: Students increase the number of addends (0-9) in their stories to three and write as many number sentences with that same sum as they can.

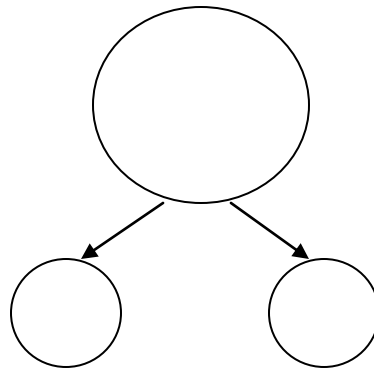
**EVIDENCE:**

**Lesson-Level Formative Assessment Procedures:**

Informal assessment occurs through observation of students' oral communication, use of phrases of encouragement, students' "fist to five" reflection on personal language use, accurate use of the ( 两 ) + measure particle ( 只 ) construction instead of the number 2 ( 二 ) before certain nouns, and participation in the activities. Math worksheets from the group's game activity and students' individual contributions to the class book of addition stories will be collected and reviewed.

**Appendices:**

1. Content of mathematics related to this lesson plan from Singapore Primary Mathematics Teachers' Guide, 3<sup>rd</sup> Ed. Chicago, 1A: Unit 3 - Addition, Topic 2 (pp. 31-32).
2. Student worksheet for recording small groups' scores and total points from Ping Pong ball activity.



$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$