Holistic Educational Solutions

Curriculum

Professional Development

Technology

Role of
Professional Development
in Enhancing the Impact of
High Quality Materials

Marshall Cavendish Education

Education Services

- Professional Development for Teachers
- In-depth Curriculum Planning
- Holistic school evaluation

Innovative Digital Solutions

- Adaptive learning technology and blended learning solutions
- Provides effective integration of ICT into leaning and teaching

Robust & Quality Content

- Comprehensive range of materials based on sound pedagogy
- Design to support curriculum, instructions and assessments

We pride ourselves in providing sound and innovative K-12 education solutions, which are developed based on successful Asian methodologies.

The quality of an education system cannot exceed the quality of their teachers and principals…

2007 McKinsey Report, ***How the world's best performing education systems come out on top***.

… but the quality of teachers and principals cannot exceed the quality of their training, their practices, their opportunities to collaborate and develop further, and their learning environments.

Andreas Schleicher,
OECD Director for Education and Skills,
TALIS 2018 Pre-Launch Webinar, 2019

We are living in a VUCA World …

Volatile
Rate of change

Uncertain
Unclear about the present

Complex
Multiple key decision factors

Ambiguous
Lack of clarity about the meaning of an event

We've reached the end of a paradigm. Many of our fundamental beliefs and practices no longer serve us or the greater world.

Margaret Wheatley, 2007

The Teacher as a Professional Learner

Teaching has to become, first and foremost, a learning profession; teachers will have to learn to learn in different ways, and reconstructed themselves as advanced specialist practitioners of learning with their pupils as their apprentices

Tripp, 2002, p. 4

Desired Conditions of Effective PD

- Align to curriculum and policies

- Shared vision with high quality instructional materials

- Allocate sufficient time to implement newly learnt instructional approaches

- "Embracing" school cultures to "trial & error" new pedagogies in teaching and learning

- Clear strategies and plan to track and assess the quality of (C)PD

Effective Teacher Professional Development,
Linda Darling-Hammond, Maria E., Hyler Madelyn Gardner, Learning Policy Institute
5 June 2017

www.mceducation.com

Great Professional Development

- Relevant to teaching and context

- Helps teachers plan and improve their instruction

- Teacher-driven

- Includes hands-on strategies applicable to their classroom

- Highly interactive

- Sustained over time

- Recognizes teachers are professionals with valuable insights

7 Characteristics of Great Professional Development,
Drew Perkins

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Professional Development by Marshall Cavendish

Teaching of Thinking Skills

Standards and Benchmarks for 21st CC

- Information and Communication Skills (ICS)
- Standard: Manages and uses information (ICS 2.1C)
- The student is able to assess and analyse information from a variety of sources and distinguish between fact, point of view and opinion to complete a task.

See/ Think/ Wonder

☞ What do you see?

☞ What do you think?

☞ What do you wonder about what you see?

- *Encourage students to make careful observations and thoughtful interpretations*
- *Stimulate curiosity and set the stage for inquiry*
- *Use in any subject with an artwork, image, artifact or topic*

See/Think/Wonder
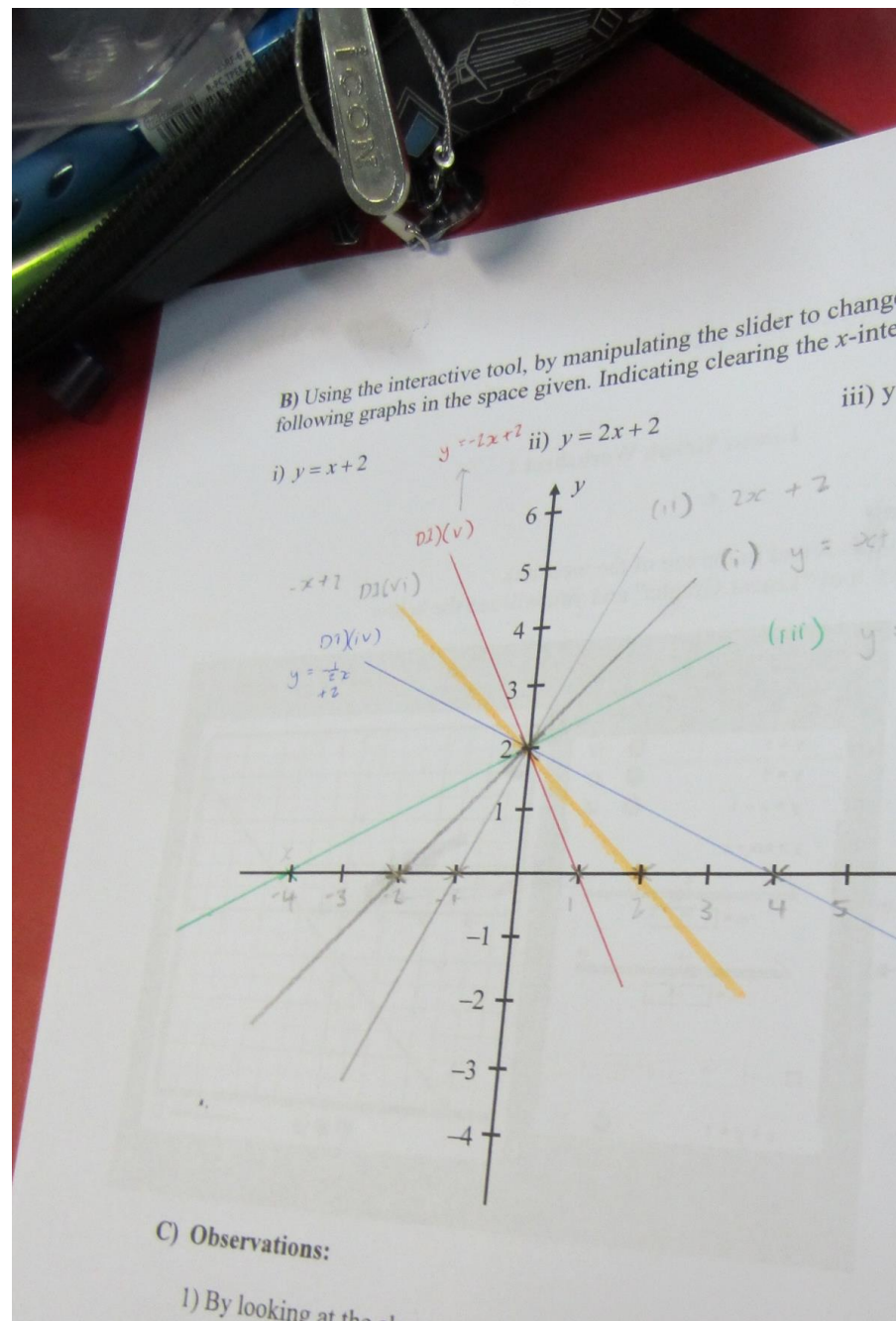
$y = 2x + 2$

$y = 0.5x + 2$

$y = -2x + 2$

1) What do you see?

2) What do you think?
- What do you think causes the line to be linear (straight line)?
- What do you think determines the direction of the slope?
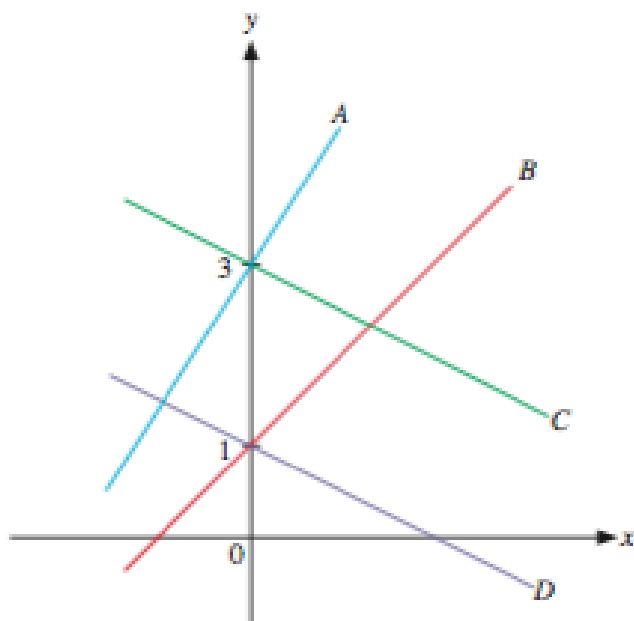
3) What do you wonder?

$y = x^2 + 2$

Example 8

(a) The diagram shows the straight lines $y = 2x + 1$, $y = -x + 1$, $y = 3x + 3$ and $y = -x + 3$.
Match the equations to the lines.

(b) The line $y = 3x + 3$ passes through the point $(p, 0)$. Find the value of p.

In the Textbook

(a) A is $y = 3x + 3$ because $m = 3$ is positive (the line slopes upwards from left to right) and the y-intercept is 3.

B is $y = 2x + 1$ because $m = 2$ is positive (the line slopes upwards from left to right) and the y-intercept is 1.

C is $y = -x + 3$ because $m = -1$ is negative (the line slopes downwards from left to right) and the y-intercept is 3.

D is $y = -x + 1$ because $m = -1$ is negative (the line slopes downwards from left to right) and the y-intercept is 1.

Teaching Problem Solving

Polya (1965) says, "solving a problem means finding a way out of a difficulty, a way around an obstacle, attaining an aim which is not immediately attainable."

Understand the Problem
- *What am I asked to find?*
- *How can I make sense of the information given?*
- *What am I given? (facts, information, data)*
- *What can I infer from the given data?*

Make a Plan to Solve It
- *Which strategy should I use?*
- *Have I solved a similar type of problem before?*
- *How could I restate / paraphrase the problem?*
- *Can I organize the given data using notes, lists, tables and diagrams?*

Carry Out the Plan
- *Which strategy is the most suitable?*
- *Have I shown all the necessary workings/labelling?*
- *Check each step as you progress.*

Look Back
- *Did I check my work?*
- *Is my answer reasonable?*

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Let's give it a try …

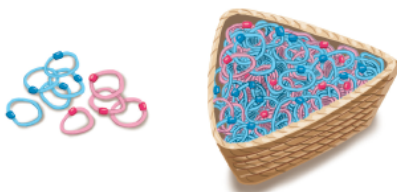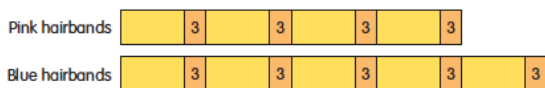**LEARN 7A**

Wendy had some blue and pink hairbands. The number of blue hairbands was $\frac{5}{4}$ of the number of pink hairbands. She gave away 30 pink hairbands and 15 blue hairbands. After that, the number of pink hairbands became $\frac{2}{5}$ of the number of blue hairbands. How many pink hairbands did Wendy have in the end?
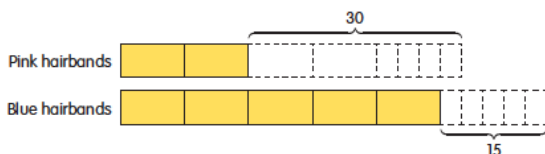
LEARN 7A

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Before

Pink hairbands | 3 | 3 | 3 | 3 |
Blue hairbands | 3 | 3 | 3 | 3 | 3 |

After

30

Pink hairbands
Blue hairbands

15

2 units = 30 − (3 × 4)
        = 18

Wendy had 18 pink hairbands in the end.

LEARN 7A (Pupil's Book 6A page 97)

Pupils learn to use a comparison model and the before-after concept to find the value of the original or changed quantities when the quantities are decreased. In these exercises, both quantities as well as the total changes.

- Direct pupils' attention to **7A** on page 97 Pupil's Book 6A.
- Use the four-step problem-solving method to guide pupils through the process.
- **Step 1** *Ask:* What have we gathered from the problem? (We know that the number of blue hairbands was $\frac{5}{4}$ of the number of pink hairbands at first.) What can we say about the ratio of the number of blue hairbands to the number of pink hairbands? (5 : 4) Were there more blue hairbands or pink hairbands at first? (blue hairbands) What happened next? (Wendy gave away 30 pink hairbands and 15 blue hairbands.) What was the ratio of the number of blue hairbands to the number of pink hairbands in the end? (5 : 2) What remained unchanged in this problem? (Nothing remained unchanged.) Were the quantities equal at any point in time? (No)
- **Step 2** *Ask:* How can we solve it? (We can draw a model.) What kind of model can we draw? (before-after comparison model) Why? (We are given the ratio of the number of blue hairbands to the number of pink hairbands at first, and we know some units were taken away from both of them, such that they had a different ratio of the number of blue to pink hairbands in the end.) Guide pupils to draw the before-after comparison model as shown on page 97 of Pupil's Book 6A. Explain to pupils that they can begin drawing the *before* model by considering only the fraction of the two quantities given.

Pink hairbands | | | | |
Blue hairbands | | | | |

- Explain that since the number of units for blue hairbands remains the same (5) even after 15 blue hairbands were given away, we can remove 15 ÷ 5 = 3 hairbands from each of the 5 units. Guide pupils to indicate this in the *before* model.

Before

Pink hairbands | | | | |
Blue hairbands | 3 | 3 | 3 | 3 | 3 |
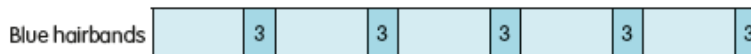
- Point out that we have to apply the same transformation to the pink hairbands and remove 3 hairbands from each of the 4 units for pink hairbands.

- **Step 3** *Ask:* What do we need to find? (The number of pink hairbands Wendy had in the end.) Guide pupils to see that 2 light blue units are equivalent to 18 hairbands. Guide pupils to use the unitary method to find the number of pink hairbands she had in the end.
- **Step 4** Have pupils work backwards for each part using the ratios of the original and final quantities, and simplifying the ratios to compare against the given *before* and *after* ratios.

... the darker blue ... move the darker blue parts? (No) Why? (Only 3 × 4 = 12 hairbands will be removed.) How many more should we remove such that 30 hairbands are removed in all? (30 − 12 = 18) How many of the light blue units should be left for the pink hairbands? (2 light blue units) Why? (The ratio of the number of blue hairbands to the number of pink hairbands in the end was 2 : 5.)
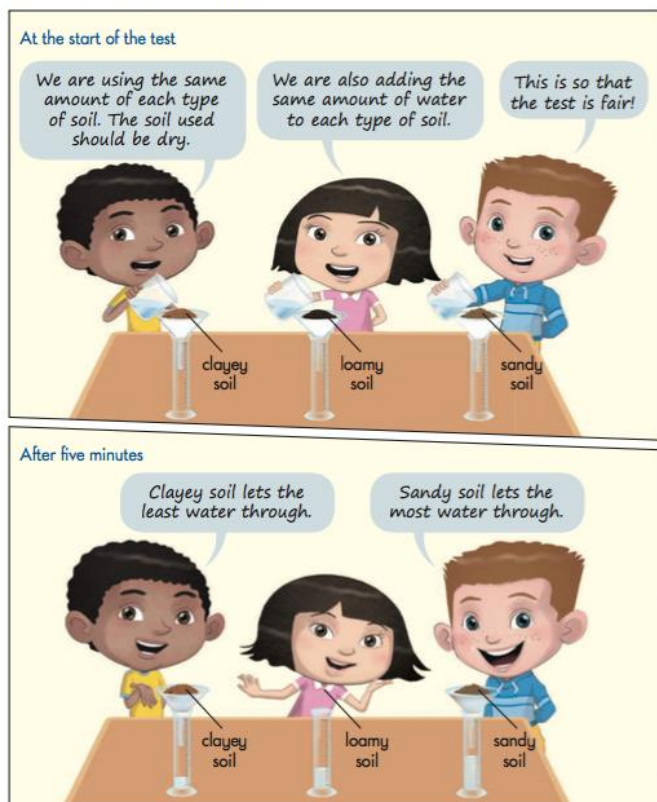- Guide pupils to indicate this in the *after* model.

After

Building an Inquiry-based Classroom …

Soil can let water through. Some types of soil let more water through than others.

Which type of soil lets the most water through? Which lets the least water through? Let us find out.

At the start of the test

We are using the same amount of each type of soil. The soil used should be dry.

We are also adding the same amount of water to each type of soil.

This is so that the test is fair!

clayey soil loamy soil sandy soil

After five minutes

Clayey soil lets the least water through.

Sandy soil lets the most water through.

clayey soil loamy soil sandy soil

Teaching ideas

11. Tell pupils to carry out a test to investigate which type of soil lets more water through, and which type of soil lets the least water through.

    • Ask them to suggest ideas on how they will carry out the test as a class.

    • **Ask:**

       – **What will you keep the same in your test?** (Answer: Amount of soil used, amount of water used, amount of time given for water to pass through each type of soil, type of measuring cylinder, filter funnel, filter paper and beaker used)

       – **What will you change in your test?** (Answer: Type of soil used)

       – **Will the test be fair if you change more than one thing?** (Answer: No.)

       – **What observations and measurements should you make?** (Answer: I should observe how quickly water passes through each type of soil and measure the amount of water collected at the end of the test.)

       – **How can you record your observations and measurements?** (Answer: I can record them in a table. (Answer varies.))

Questions for scaffolding and assessing understanding

Can I construct meaning from visual texts?

► Prompt pupils:
• What was Rena afraid of? (*She was afraid of climbing the high wall.*)
• Who were behind her? (*They were her teammates.*)

► Draw pupils' attention to the visual clue. Point out the girl standing by the wall. Elicit from pupils that rock climbing is a team sport and that the girl's teammates are all depending on her.

Answer: ————
She was about to climb the wall.

Answer: ————
She felt afraid.

Reading Strategy: Connect and Question

► Help pupils to ask questions about the text as they read the story:
• Why was Rena lying through her teeth?
• Rena's thoughts were getting the better of her. Has this ever happened to you?
• What made Rena lose confidence in herself during the climb?

Unit 1 Overcoming Fear

In this unit, I will:
• **read and respond to a story.**
• **know the different parts of a story.**
• **plan and write a story on my own.**

Reading

Face It is a narrative. A narrative is a story or an account of events which may or may not be true. Read this inspiring story about a girl who managed to overcome her fear of heights.

Face It

Note!
The word "cast" is an irregular verb.

What was Rena about to do?

How did Rena really feel at this point?

The rock wall cast a shadow across my face. I stared up at it anxiously. From a young age, I have hated looking over balconies or taking escalators. The thought of being high up above the ground made me dizzy and nauseous.   5

"Rena! What are you waiting for?" my teammates yelled at me. "Are you afraid?"

"Yes," I thought to myself as my fear began creeping in again. "Of course not," I replied coolly, lying through my teeth.   10

2 Unit 1

Differentiated Instruction

- Point-of-Use
  Differentiated Instruction

Fill in each blank.
Use related facts to help you.

③ ___8___ – 4 = 4

4 + 4 = _8_
So, _8_ – 4 = 4.

④ 2 + ___5___ = 7

7 – 2 = _5_
So, 2 + _5_ = 7.

For Extra Support

Some students are able to make fact families but are unable to apply the concept of related facts with understanding. Contextualize these experiences with word problems and have the students build or sketch so they understand how, why, and when the related fact can be applied.

Hands-on Activity Using place value to show numbers to 40

Take 40 |||| .

① Show 22 in tens and ones.

You can bundle each group of 10 |||| together.

② **Mathematical Habit 7** **Make use of structure**

Write 22 on the place-value chart.

Tens	Ones
2	2

③ Repeat ① and ② for these numbers.

For Advanced Learners

For students who have completed the activity, challenge them to use a variety of ways to describe a number. For example:

- 3 tens 4 ones
- 1 ten 24 ones
- $30 + 4 = 34$
- $34 = 4 + 30$
- $30 + 4 = 4 + 30$
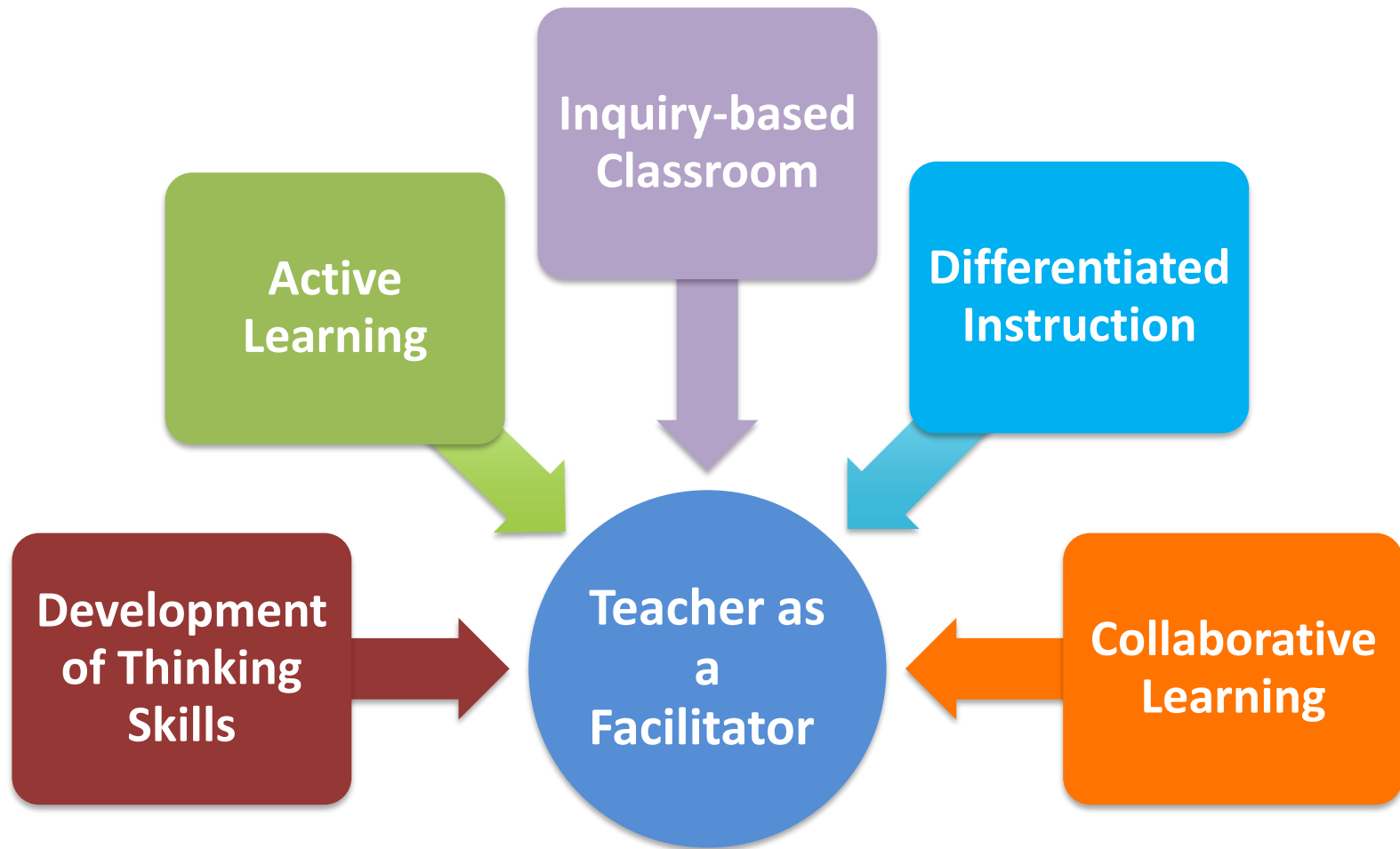- $34 = 10 + 10 + 10 + 4$

Desired Conditions of Effective PD

- Align to curriculum and policies
- <mark>Shared vision with high quality instructional materials</mark>
- Allocate sufficient time to implement newly learnt instructional approaches
- "Embracing" school cultures to "trial & error" new pedagogies in teaching and learning
- Clear strategies and plan to track and assess the quality of (C)PD

**Effective Teacher Professional Development,
Linda Darling-Hammond, Maria E., Hyler Madelyn Gardner, Learning Policy Institute
5 June 2017**

… clear features of high quality in the Singapore and Hong Kong texts, such has the extended application of maths and reflective activities in the Singapore texts,… and the extremely clear presentation, explanation and reinforcement of key concepts and ideas in both. The coherence with the national curricula in each setting, and the strength of the pedagogic model promoted by the text, is impressive.

Tim Oates,
Group Director Assessment Research & Development,
Cambridge Assessment
"Why Textbooks Count" – November 2014

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The Teacher as a True Facilitator

Inquiry-based Classroom

Active Learning

Differentiated Instruction

Development of Thinking Skills

Teacher as a Facilitator

Collaborative Learning

21

The Teacher as a Collaborator

Professional Learning Community
- Lesson study
- Observation & Feedback
- Sharing
- Collaboration

"a culture is born where teachers are professional learners"

High-performing systems transform the improvement cycle into a **culture** of **continuous professional learning** that, in time, turns schools into true learning organizations.

- Effective professional learning
- Development of teacher expertise through research
- Distinct roles
- Responsibility for own learning and learning of others
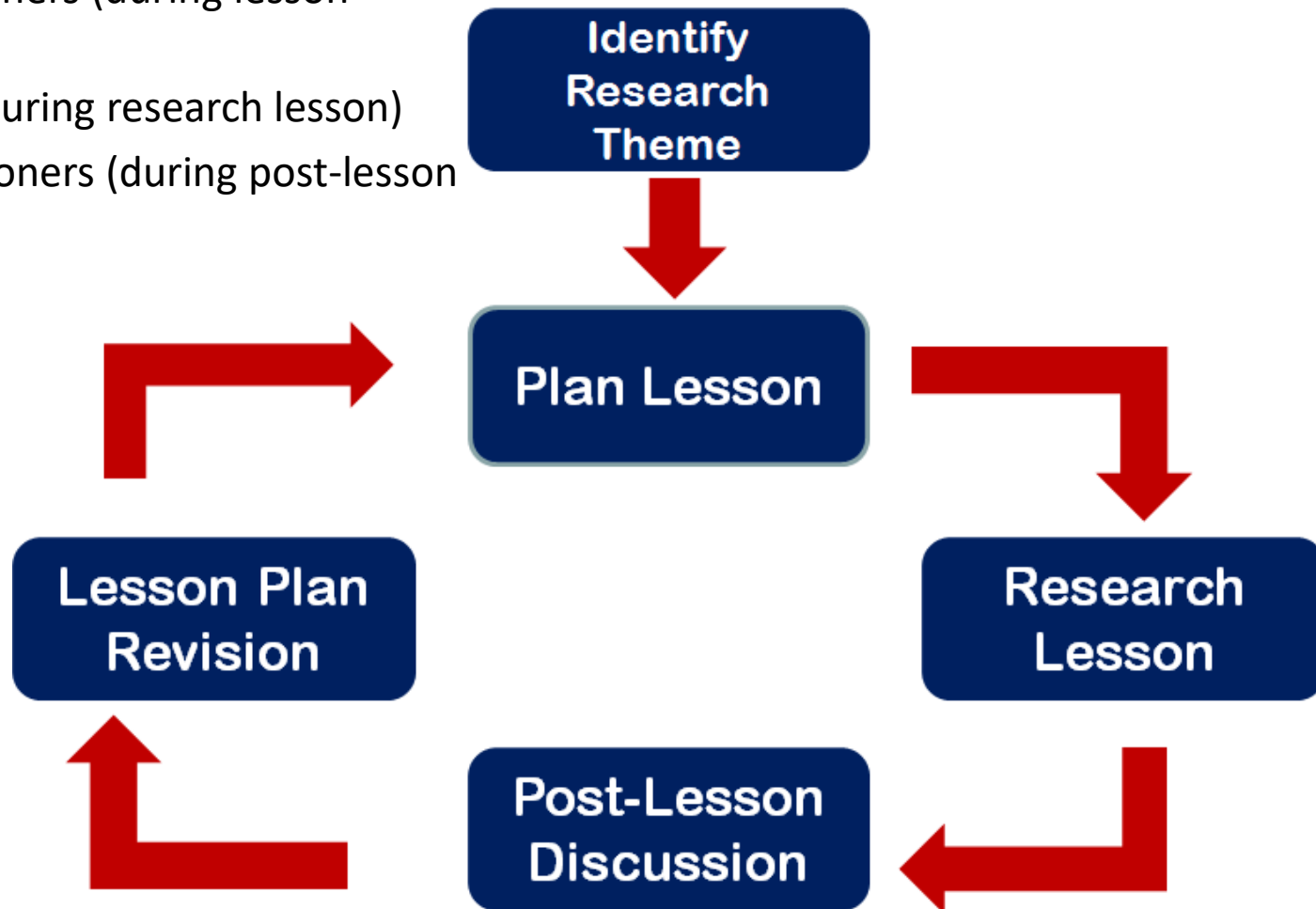- Collaborative

Beyond PD: Teacher Professional Learning
in High Performing Systems
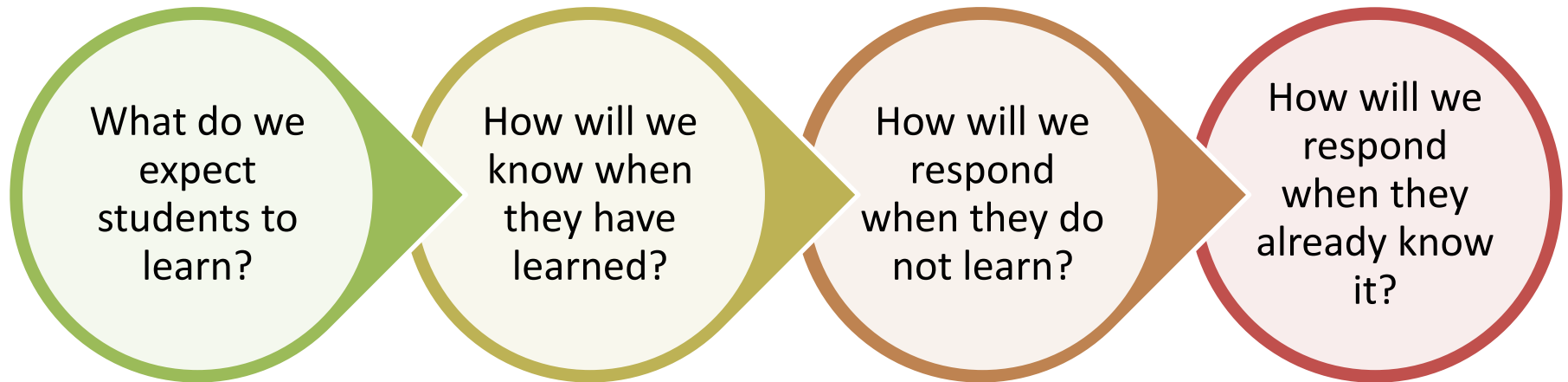**by Jensen, Sonnemann Roberts-Hull and Hunter, 2016**

Lesson Study

Teachers as

- Active lesson planners (during lesson planning)
- Keen observers (during research lesson)
- Reflective practitioners (during post-lesson discussion)

Identify Research Theme

Plan Lesson

Lesson Plan Revision

Research Lesson

Post-Lesson Discussion

24

Lesson Study: Four key questions

What do we expect students to learn?

How will we know when they have learned?

How will we respond when they do not learn?

How will we respond when they already know it?

Student learning is what matters.

Teacher's Perceptions of Lesson Study

Teachers strongly agreed that:

- LS offered them the opportunity to learn from colleagues and grow professionally (29% of 129 teachers)

- LS had raised ideas that would influence their own classroom instruction (28%)

- LS increased their understanding of students' learning processes in the subject (26%)

- LS increased collegiality among colleagues (23%) but teachers were tentative about opening their lessons for others to observe.

Taking Stock of Lesson Study as a platform for teacher development in Singapore
Lim, et al., 2012

"

High-performing systems transform the improvement cycle into

a **culture** of **continuous**

professional learning

that, in time, turns schools into true learning organizations.

"

Beyond PD: Teacher Professional Learning in High Performing Systems
by Jensen, Sonnemann Roberts-Hull and Hunter, 2016

When we focus
on teachers,
our students succeed
(NTC, 2012)

Happy and Motivated Learners!