

Infusing Subject Literacy Support in English, Mathematics and Science Classrooms

Gongshang Primary School



- Mrs Lisa Choo
- Mrs Lata Menon
- Madam Widayu Binte Kemat

English in a Future-ready Singapore

EUS Conference
12 September 2017

Overview

- **Aligning WSA-EC to GSPS Vision**
- **Infusing Subjects Literacy Support**
- **GSPS WSA-EC 3-year Journey**
- **Feedback & Suggestions**
- **Success Factors**
- **Key Challenges**
- **Future Plans**

Aligning WSA-EC to Gongshang Primary School's Vision



Gongshang Primary School

Mission

To provide a safe and happy environment for our pupils to strive towards excellence

Vision

A healthy, confident, gracious and morally upright pupil with a passion for learning and love for Singapore

Strategic Thrusts

Developing a Learning Community

Nurturing a 21st Century Learner

Achieving Quality School Management Systems



Gongshang's PD MODEL



School Learning Direction

Enhancing Staff
Capacity to Develop
The Gongshanger

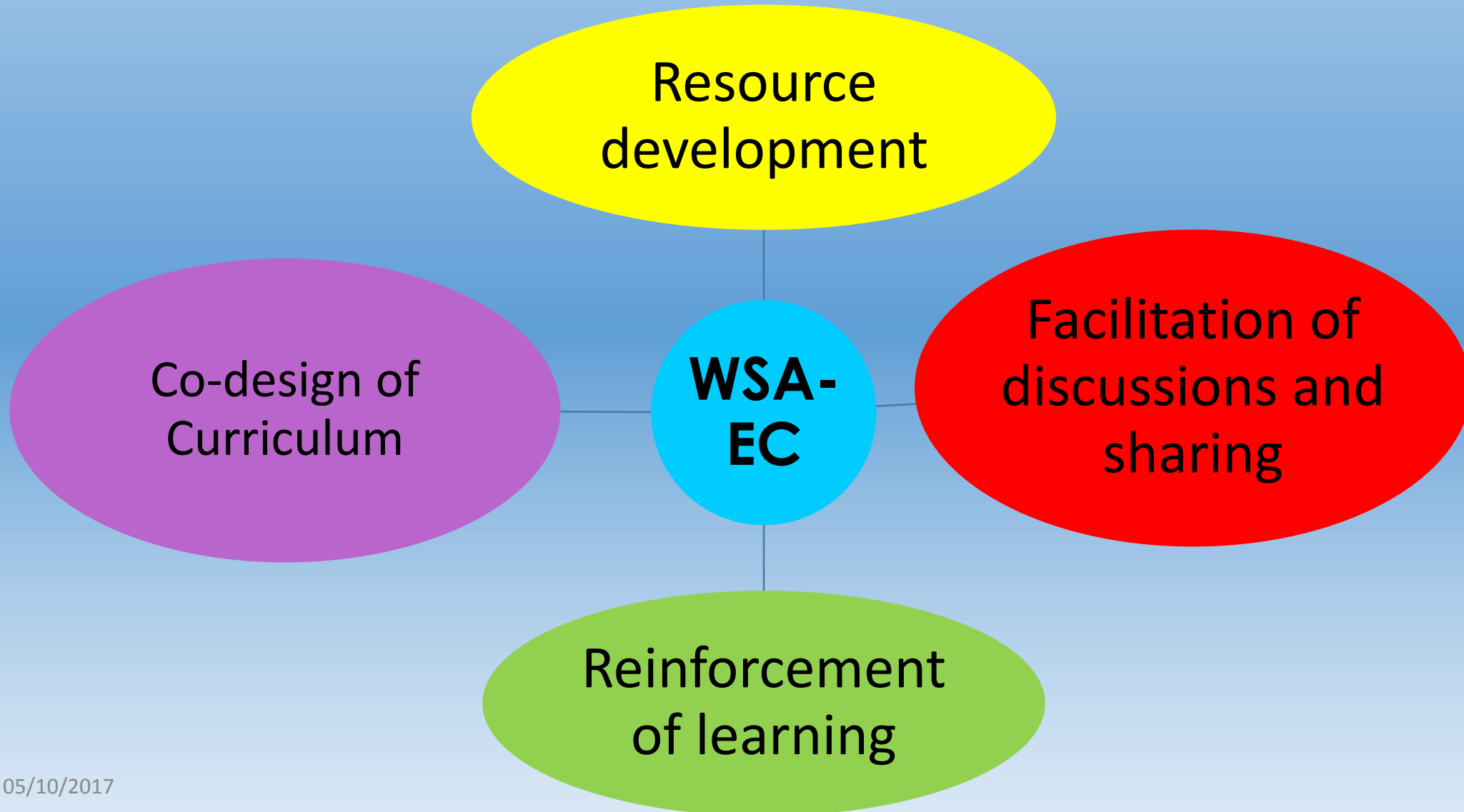
2020



Infusing Subject Literacy Support



Whole School Approach



Gongshang's WSA-EC 3-year Journey



Gongshang's WSA-EC Journey

HSA in EC
Building Teacher
Capacity

Y1
(2014)

HPA in EC
Developing
Students'
Communication
Skills

Y2
(2015)

HA in EC
Sustaining
Communication
Channels

Y3
(2016)



WSA-EC

Year 1 (2014)

**Heightening Staff Awareness in
Effective Communication
(HSA in EC)**

Building Staff Capacity



Effective Communication

Vygotsky (1934) advocated that knowledge is co-constructed and emphasized the **importance of communication, language and culture** in giving meaning and personal significance to learning.

Thus the social constructivist approach proposes that:

- **Communication is a pre-requisite to learning**
- **Knowledge and concepts** are determined by and **conveyed in the language used**
- Ideas and beliefs are influenced by culture and context



Building Staff Capacity

- **Workshop on Effective Questioning**
- **Lesson Planning and Reflections**
- **Peer Observations**
- **Opening Up Talk for Learning in the Subject Classrooms**



Staff Workshop on 'Asking Good Questions'

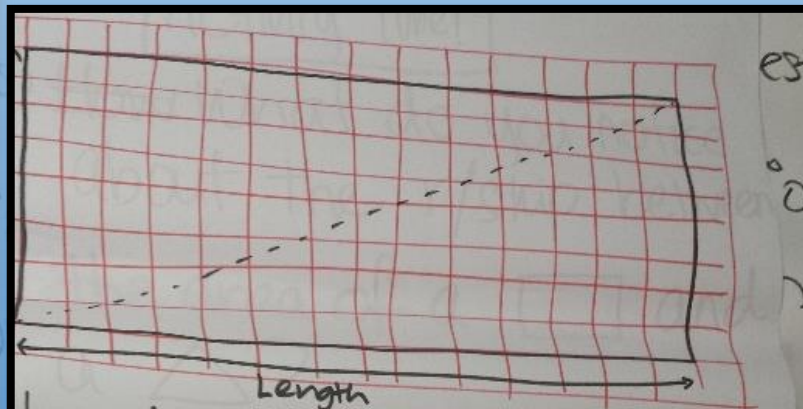


Workshop on 'Asking Good Questions'

Samples of Questions by Teachers

Activity Time!

- 1) ~~How~~ What do you notice about the r/ship between the area of a $\square$ and a $\triangle$?
- 2) What pattern do you notice? *~ What made you think of that?*
- 3) What does this tell you about the area of a triangle?



How do you find the area of this rectangle?

How can you divide this rectangle into 2 equal triangles?

Describe how you can find the area of each triangle!

How do you know these 2 triangles are equal?

How do we phrase good questions? (o)

Is there creative questioning? (c)

What does it mean by 'asking good questions'? (o)

How do we ask questions beyond the 5WH and 1H? (o)

What do we do when there is no response to our questions?



Lesson Planning & Reflections



Sample Lesson Plans

Upper Primary EL

What functional language did they need?

Pupils need to know which is the main clause and the subordinate clause in the given examples. They needed to be able to explain that the relative clause (non-defining) contains more information about that subject that could be left out of the sentence without affecting the main message and that is enclosed by commas.

Topic: Complex Sentences

1. What were the content vocabulary items?
 - Relative Pronouns (who, which, where, that, when, whose)
 - Relative Clauses (clauses beginning with relative pronouns)
 - non-defining / defining clause
 - compound / complex sentence
2. Were these taught in just one form? (eg verb form, noun form)
 - Yes
3. What language skills (reading / writing) did learners use?
 - reading
 - combining two sentences into one
 - speaking

4. What functional language did they need?

Pupils needed to know which is the main clause and the subordinate clause in the given examples. They needed to be able to explain that the relative clause (non-defining) contains more information about the subject that could be left out of the sentence without affecting the main message and that it is enclosed by commas.

5. What scaffolding was provided in the lesson?

Teacher used several examples to get pupils to illicit the main clause and the subordinate clause in the examples used. Pupils had oral practice using the examples put on PowerPoint slides. For group work, pupils attempted to join the two sentences given into one using the given relative pronouns. Pupils worked on 8 examples and wrote their answers on their little white boards. Their answers were shared with the rest of the class.



Sample Lesson Plans

Lower Primary MA

Language Awareness in the Subject Classroom (Primary) Language Support for a Mathematics Task

1. What were the content vocabulary items?

- tall
- taller
- tallest

4. What functional language did they need?

- of e.g. The length of the ribbon is 10 units.
- as...as e.g. The blue ribbon is as long as the green ribbon.

- unit/s
- as long as

05/10/2017

2. Were these taught in just one form? (eg verb form, noun form)

- Comparative form
e.g. The snake is longer than the caterpillar.
The giraffe is the tallest animal.
- Adjectival form
e.g. The rope is long.
Bala is short.

3. What language skills (reading / writing) did learners use?

- Listening e.g. Listening to the teacher and listening to one another
- Reading e.g. Reading the Math vocabulary words and sentences
- Writing e.g. Practice using the worksheet
- Speaking e.g. Pupils answering the teacher's questions

4. What functional language did they need?

- of e.g. The length of the ribbon is 10 units.
- as ...as e.g. The blue ribbon is as long as the green ribbon.

5. What scaffolding was provided in the lesson?

- C-P-A (Concrete -> Pictorial -> Abstract)
- Flash cards
- Use of manipulatives (Concrete examples) e.g. straws, ruler, ribbon, string
- Pictorial e.g. pictures of objects of different lengths
- Abstract e.g. explanation/demonstration by the teacher

Sample Lesson Plans

P3 Science

What functional language did they use?

Being able to use the Scientific vocabulary to fluently express their thoughts coherently through verbal explanation and written form.

- **Magnet / attract / magnetic materials e.g. Magnets attract only magnetic materials OR Magnetic materials are attracted to magnets.**
- **Magnets / repel / attract e.g Magnets can repel or attract one another or Like poles repel while unlike poles attract.**

Gongshang Primary School

Whole School Approach – Effective Communication (WSA-EC)

2 April 2014

Language Awareness in the Subject Classroom (Primary)
Language Support for a/an English, Math or Science Task

Subject: Science Level: P3

Topic: Interaction: Magnets; Lesson 1.1

1. What were the content vocabulary items?

- Magnets
- Iron
- Steel
- Attract
- Repel
- Magnetic
- Non-magnetic

4. What functional language did they need?

Being able to use the Scientific vocabulary to fluently express their thoughts coherently through verbal explanation & written form.

- Magnet / attract / magnetic materials e.g. Magnets attract only magnetic materials or Only magnetic materials are attracted to magnets.
- Magnets / repel / attract e.g. Magnets can repel or attract one another or Like poles repel while unlike poles attract.



Sample Lesson Plans

Physical Education

Language Awareness in the Subject Classroom (Primary)

Subject: Physical Health Education Primary

2

Topic: Overhand Throw and Catch

4. What functional language did they need?

❖ Verbs – Throw, step, rotate, extend, catch, reach, give, bend

❖ Adjectival words/phrases – opposite foot, high, low, hard, controlled, soft/light

4. What functional language did they need?

- ✓ Verbs - Throw: Step, rotate, extend (follow through)
- Catch: Reach, give, bend,
- ✓ Adjectival words/phrase– Opposite foot, high, low, hard, controlled, soft/light

5. What scaffolding was provided in the lesson?

- ✓ Pair exploratory activities: Pupils to explore the different ways of throwing the object to partners.
- ✓ Use familiar and concrete example: Use the example of a rainbow to illustrate what is meant by a lob pass for the overhand throw for pupils to visualise the trajectory/flight of the object. Use the example of a sponge to illustrate what is meant by “give” to absorb the force/impact of object when catching it.
- ✓ Visual aids/props: Show a picture of a rainbow so that the pupils can visualise the intended trajectory/ flight of the object. Show a sponge and get pupils to see how the sponge can absorb the force/impact of an item dropped on it
- ✓ Teacher’s Demonstration: Teacher to demonstrate the overhand throw and catch and talk/explain concurrently
- ✓ Pupils’ Demonstration and Practice: Select pupils to demonstrate and have pupils to practise the overhand throws and catch with partners



What language skills (reading / writing) did learners use?

- ✓ Listening skills – listening to the instructions and feedback during the practice

05/10/2017

© Gongshang Primary School 2017

Sample Lesson Plans

Music

1. What were the content vocabulary items?

Vocabulary : Cello, piano, saxophone, French horn, flute, trumpet, violin, woodwind, brass, string, percussion

Before explicitly introducing the items, they were shown the pictures and video of the instruments so that they can see/hear the tone of the instruments and understand how the instruments are played. After which the four families in the orchestra are introduced.

Language Awareness in the Subject Classroom (Primary) Language Support for a Music Lesson for Primary 4

Subject: Music Level: 4

Topic: The Orchestral Instruments

1. What were the content vocabulary items?

Vocabulary: cello, piano, saxophone, french horn, snare drum, flute, trumpet, violin, woodwind, brass, string, percussion

2. Were these taught in just one form? (eg verb form, noun form)

Yes since the terms are all nouns in form.

Before explicitly introducing the items, they were shown the picture and video of the instruments so that they can see/hear the tone of the instruments and understand how the instruments are played. After which the four families in the orchestra are introduced.

Sample Reflections



Reflections

GONGSHANG PRIMARY SCHOOL (WEEKLY PLAN)

Year : 2014

My Reflections on Student and Teacher Outcomes

(Recommended frequency: At least once a fortnight; i.e. 5 per term or 20 per year)

CONFIDENT PERSON

SELF-DIRECTED LEARNER

CONCERNED CITIZEN

ACTIVE CONTRIBUTOR

My reflection on WSA-EC sharing on Wednesday

I find the session very meaningful because effective communication is something which everyone of us is using every day yet many of us would not have thought of it as an area which we need to reflect and improve on. I guess this could be because sometimes we thought that as teachers, we would have known what effective communication is since communication is what we use every day and that it comes so naturally to us.

What was brought to my attention was the word 'effective'. It was good that during the sharing, we learnt that effective communication is all ^{about} ~~able~~ being clear, precise, concise, accurate, directional and grammatically accurate. It got me thinking about the way I communicate with my classes. Instead of thinking that it is the pupils who are unable to understand what I say, I ought to ask myself if my instructions were clear enough.

What was brought to my attention was the word 'effective'. It was good that during the sharing, we learnt that effective communication is all about being clear, precise, concise, accurate, directional and grammatically accurate. It got me thinking about the way I communicate with my classes.

Instead of thinking that it is the pupils who are unable to understand what I say, I ought to ask myself if my instructions were clear enough.



05/10/2017

© Gongshang Primary School 2017

2014
Officer / Date

Peer Coaching



Literature Review on Peer Coaching

Jan Robertson (2005) defined peer coaching as:
...a special, sometimes reciprocal, relationship between (at least) **two people who work together to set professional goals and achieve them.** The term depicts a learning relationship, where the participants are open to new learning [and] engage together as **professionals equally committed to facilitating each other's leadership learning development and well-being**...Dialogue is the essence of coaching and the concurrent improvement of practice.



P3 LP EL lesson 'Writing A Procedural Text'

Peer Coaching

The teacher was also observed to have:

- ✓ phrased questions clearly
- ✓ provided opportunities for pupils to respond
- ✓ followed up pupils' responses appropriately

Teach	Sub	Top	No.		
			1	The teacher asked questions to elicit prior knowledge of the topic.	
			2	The teacher phrased questions clearly.	✓
			3	The teacher repeated questions only when pupils did not understand. (The teacher avoided repeating questions unless pupils did not understand.)	
			4	The teacher used adequate wait time after asking questions.	
			5	The teacher asked questions in different structures and formats: • Managerial • Rhetorical • Closed Convergent • Open Divergent	
			6	The teacher included questions at higher cognitive levels of applications, analysis, synthesis and evaluation.	
			7	The teacher provided opportunities for pupils to respond.	✓
			8	The teacher followed up pupils' responses appropriately.	✓



Opening Up Talk for Learning



Opening Up Talk for Learning in Subject Classroom

Samples of Transcripts & Reflections



Rationales of using transcripts

- To reveal **patterns and trends** useful in future planning and teaching.
- Provides **a window into student's learning** and support the teacher to see the effect of instructions on the students
- A self-awareness for **teachers to reflect upon their talk moves** in their subject classroom.
- To heighten one's reflection of **effective questioning techniques**.



P3 MA lesson

Addition of Fractions – To add like fractions

Transcript

	Okay...is called the denominator and the upper part is called the numerator. Okay. Yes, Azizah. All right...next. The next thing we learn about is: How do we add fractions? For example, 1 out of 9 plus 7 out of 9. How do we add the fractions? ...Yes
S4	XXX
T	You add the numerator. Why is it you do not add the denominator?
S5	Because xxx
T	Raise your hand...Yes, Sean?
S5	Because the denominator is the whole
T	Because the denominator is the whole...What does the denominator show?...It is actually what? (pause) Is there another way of saying instead of saying whole of a part?
S6	The total number of cut pieces

Transcript & Reflection Sample

I asked questions to elicit different responses e.g. 'Is there another way of saying...'

Reflections

Reflections

Overall, I feel that it was a good lesson in which I was patient in eliciting responses from my students to clarify concept of what a 'denominator' is, which was important for the lesson to progress to the concept of addition and subtraction of fractions. In retrospective, I could have written the question/responses on the whiteboard to facilitate better interaction and engagement among the students.



WSA-EC

Year 2 (2015)

**Heightening Pupil Awareness in
Effective Communication
(HPA in EC)**

Developing Students' Communication Skills



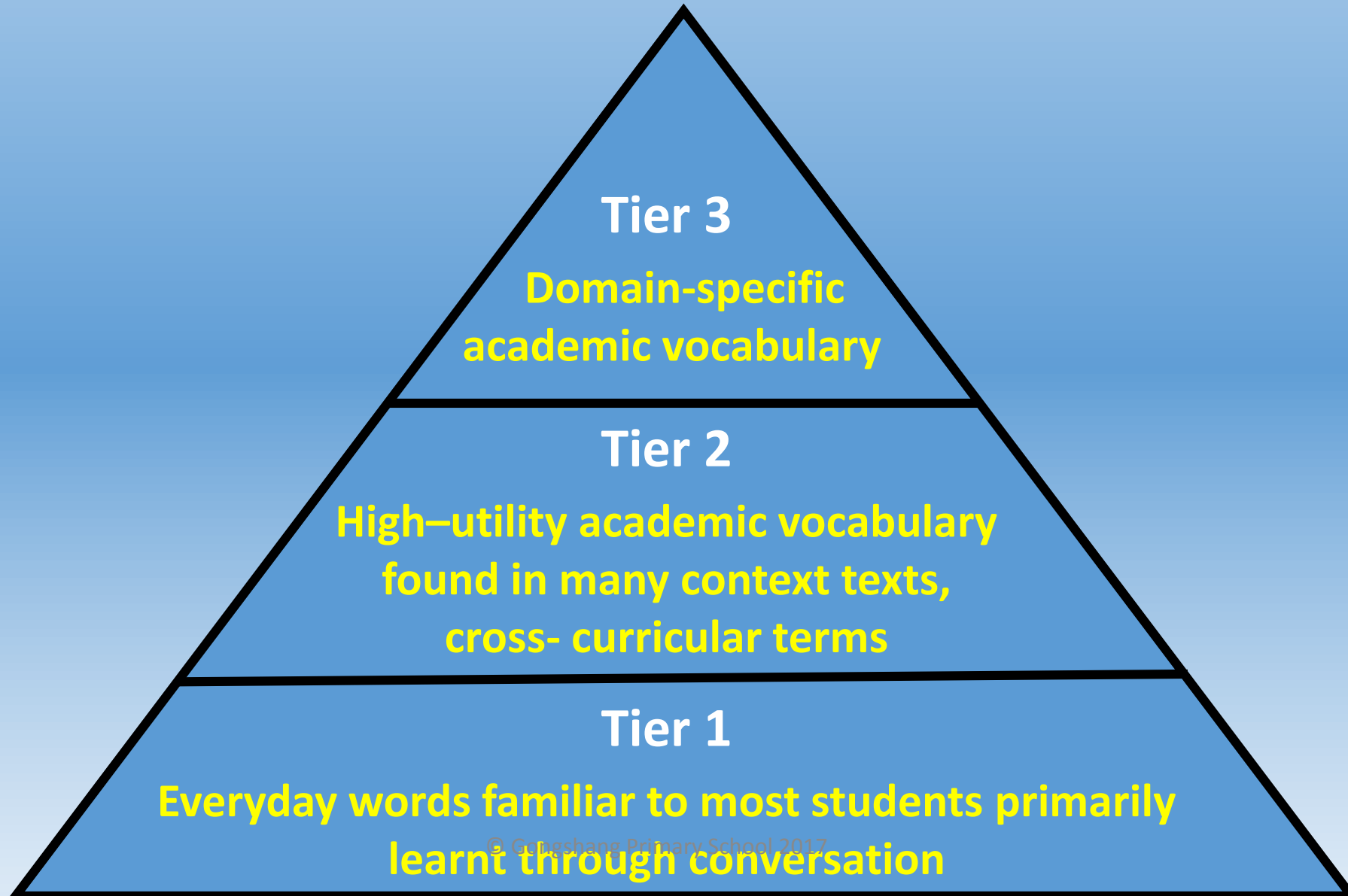
Developing Students' Communication Skills

- **Focus on Vocabulary**
- **Word Splash**
- **Journaling**



3-Tiered Approach to Teaching Vocabulary

(Educators : Beck & McKeown , 1985)



Marzano's Six-Step Process

Marzano (2004) recommends a six-step process to the teaching of **vocabulary**, based on research and theory on direct instruction to enhance students' **ability to understand and acquire vocabulary knowledge.**



Marzano's Six-Step Process

- Step 1: **Teacher gives an explanation**, description, or example of the word.
- Step 2: Teacher asks **students to give an explanation**, description, or example of the word **in his/her own words**.
- Step 3: Students draw a symbol, picture, or locate **a graphic to represent the word**.
- Step 4: Teacher provides students opportunity to learn the new **vocabulary in greater depth** - past form of the verb, give the antonym of the word, adding prefix or suffix to the word, additional meanings to the word.
- Step 5: Students discuss the meaning of the new word **with other learners**.
- Step 6: Teacher to **use games to provide reinforcement** of the new word. eg Bingo



Name _____

STEP 3 of Marzano's 6-step Process

Date: 4-4-2012

Word	Meaning	Drawing
1) backyard	a flat area behind a house	
2) beetles	insects with round, hard backs	
3) humongous	huge	
4) munching	to eat noisily	
5) amazing	extremely good especially in a surprising and unexpected way	
6) burgers	a flat round piece of meat which is placed between a round bun	

Word	Meaning	Drawing
7) frantic	worried or frightened about a situation	
8) chirp	short high sounds made by birds	
9) digger	a large machine that digs and moves earth	
10) spade	a tool for digging that has a long handle and a broad metal blade you push into the ground	
11) squiggle	a short irregular line in writing or drawing	
12) crickets	small brown jumping insects that makes noise by rubbing its wings together	



Word Splash for EL, MA, SC



Rationales for using Word Splash

- Students examine the words displayed, **construct meaning** and **make connections** from the terms about the topic
- To determine **prior knowledge** of the students
- To **summarise the concepts** learnt for the lesson



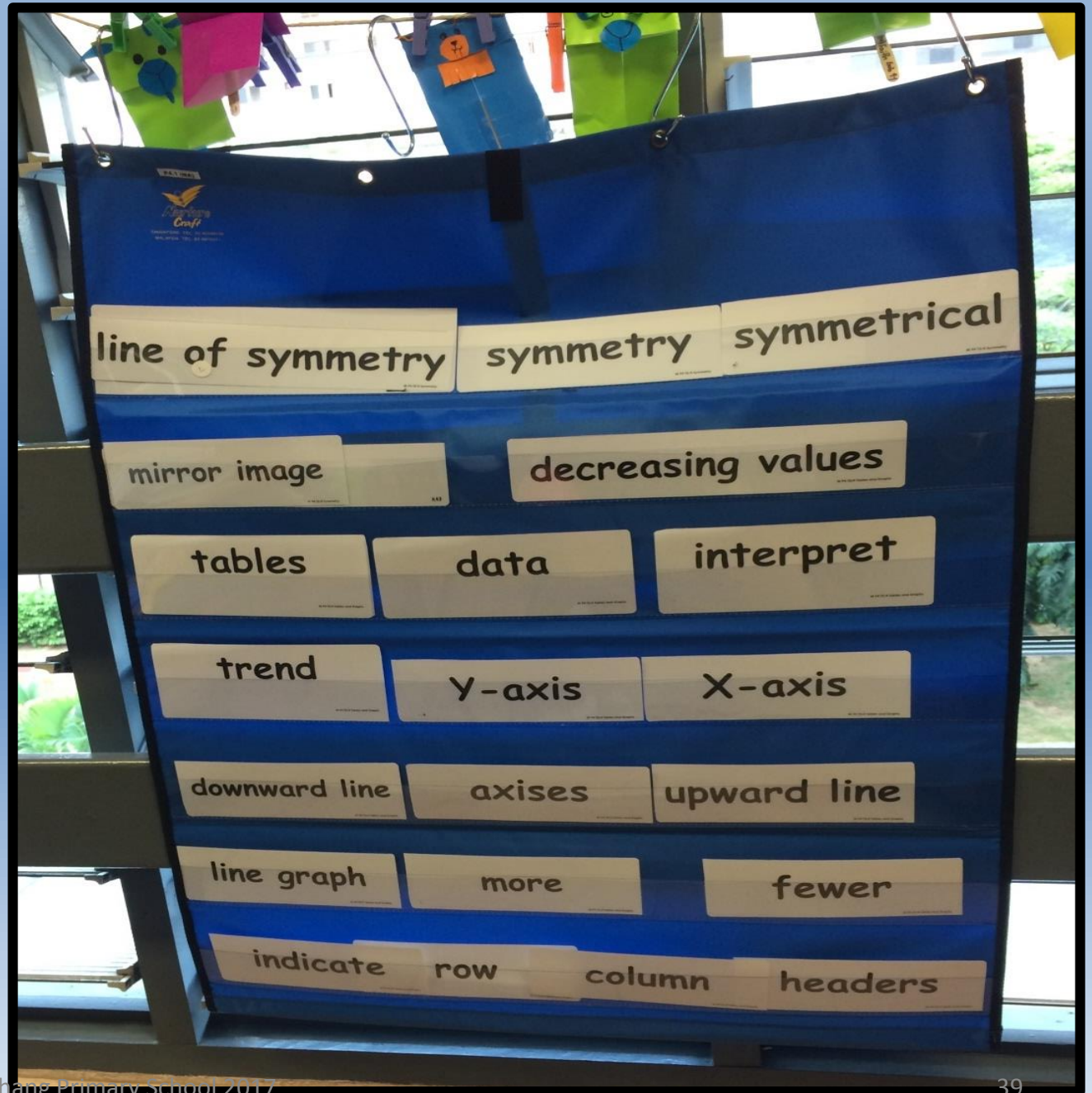
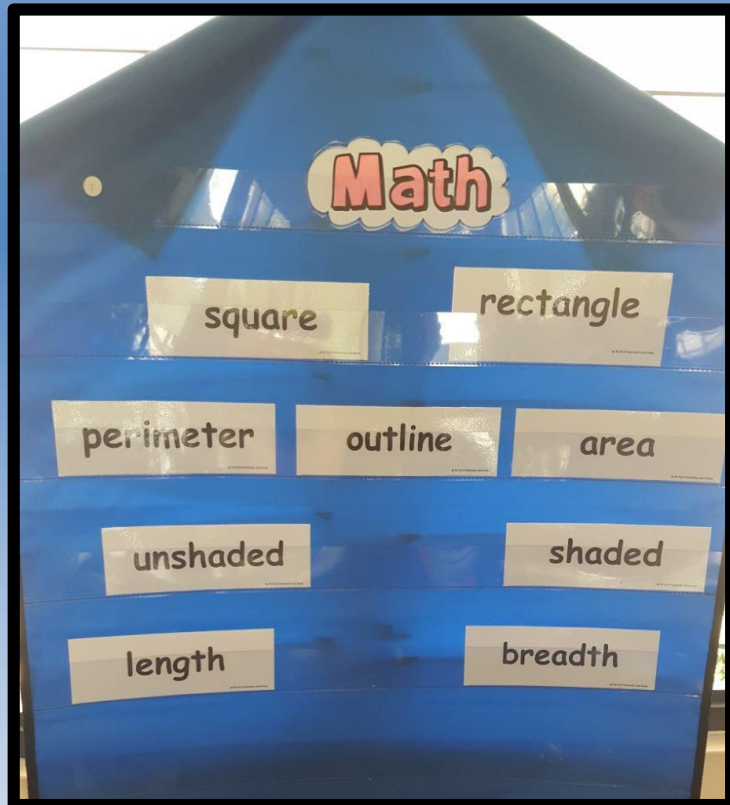
Word Splash

English Word Chart



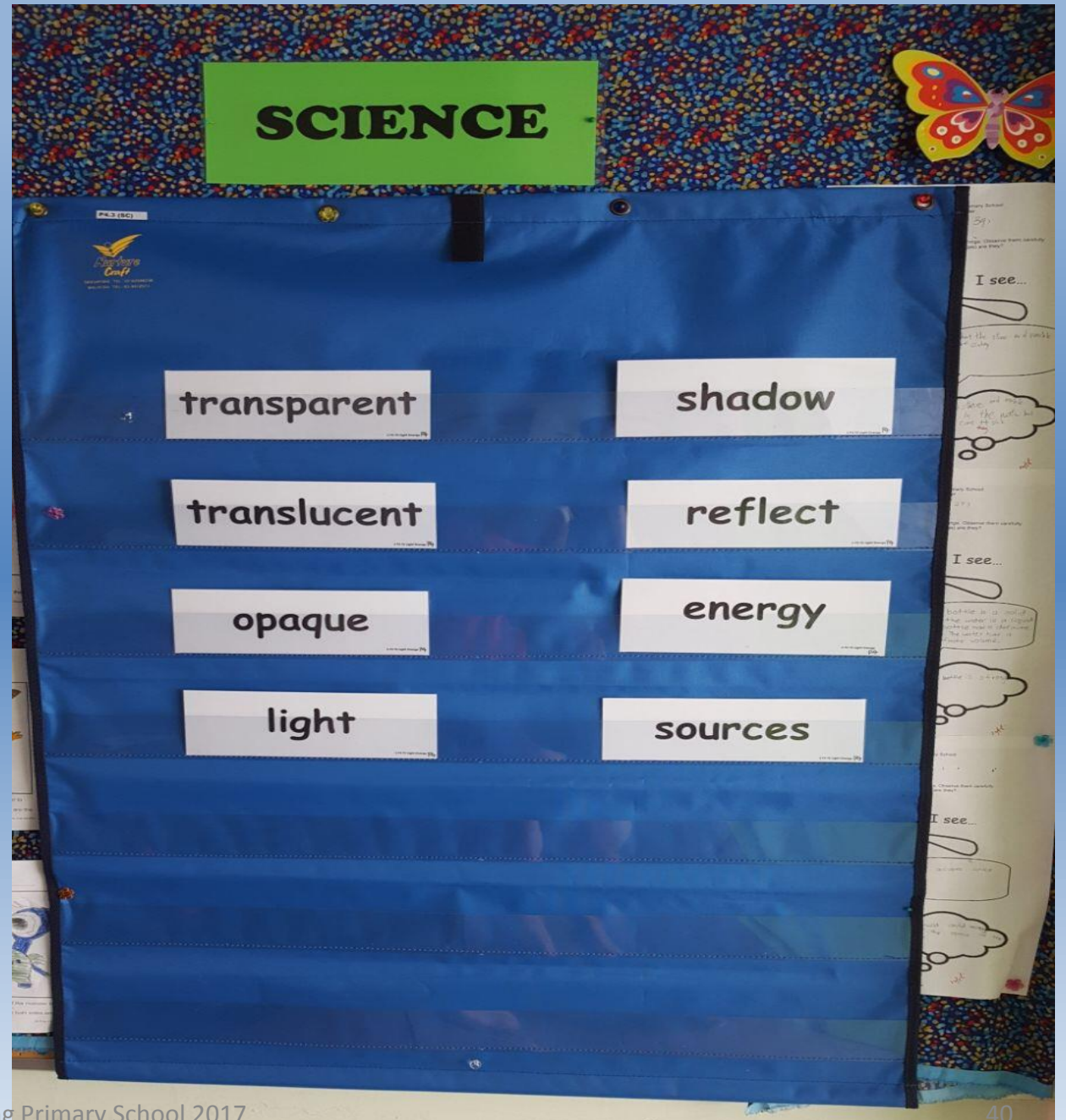
Word Splash

Math Word Chart



Word Splash

Science Word Chart



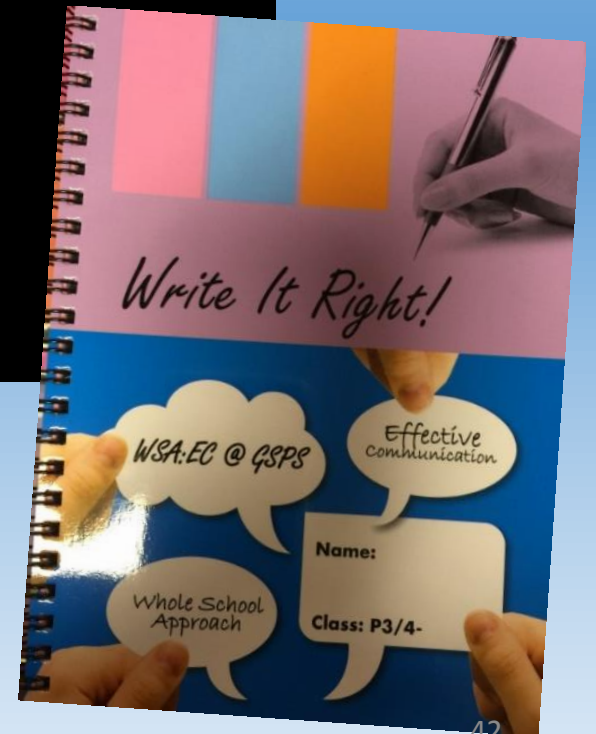
Journaling



Rationales of Journaling

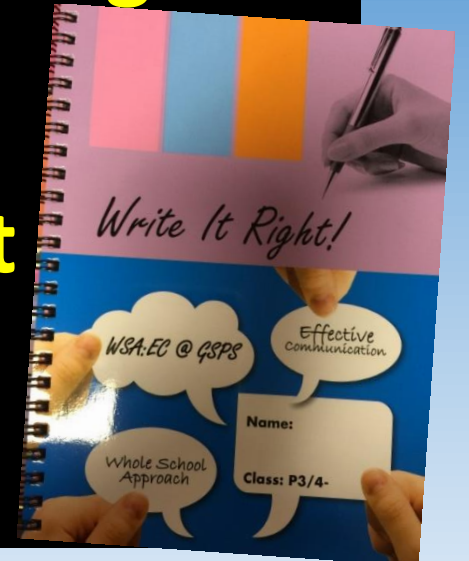
by Amanda Morin, educator (2012)

- Enhances reflection
- Facilitates critical thoughts



Write It Right

- Incorporated into **different subjects**.
- Students journal their **individual thinking processes** and record their group discussions of learning in the book; thus making their **thought processes visible**.
- Students **illustrate** their learning to **reflect** what they have learnt. Hence, **improving** their **written communication**.



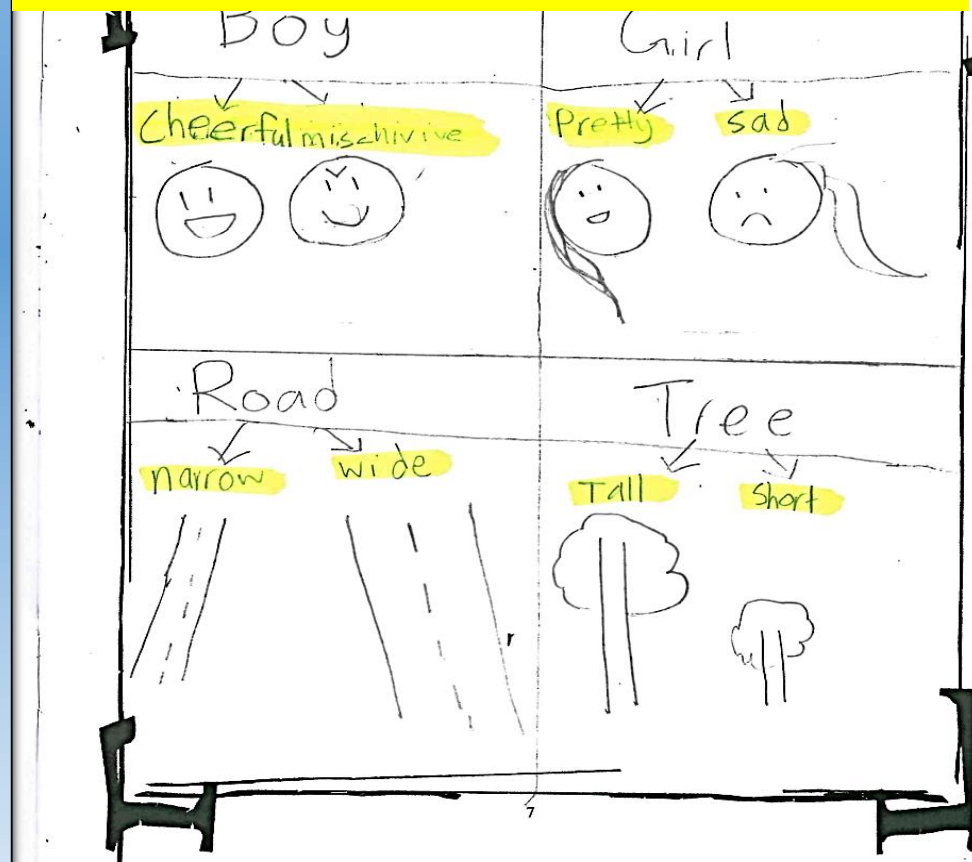
WSA-EC

Journaling In English



Samples from P1 & P2

Parts of Speech



Samples from P1 & P2

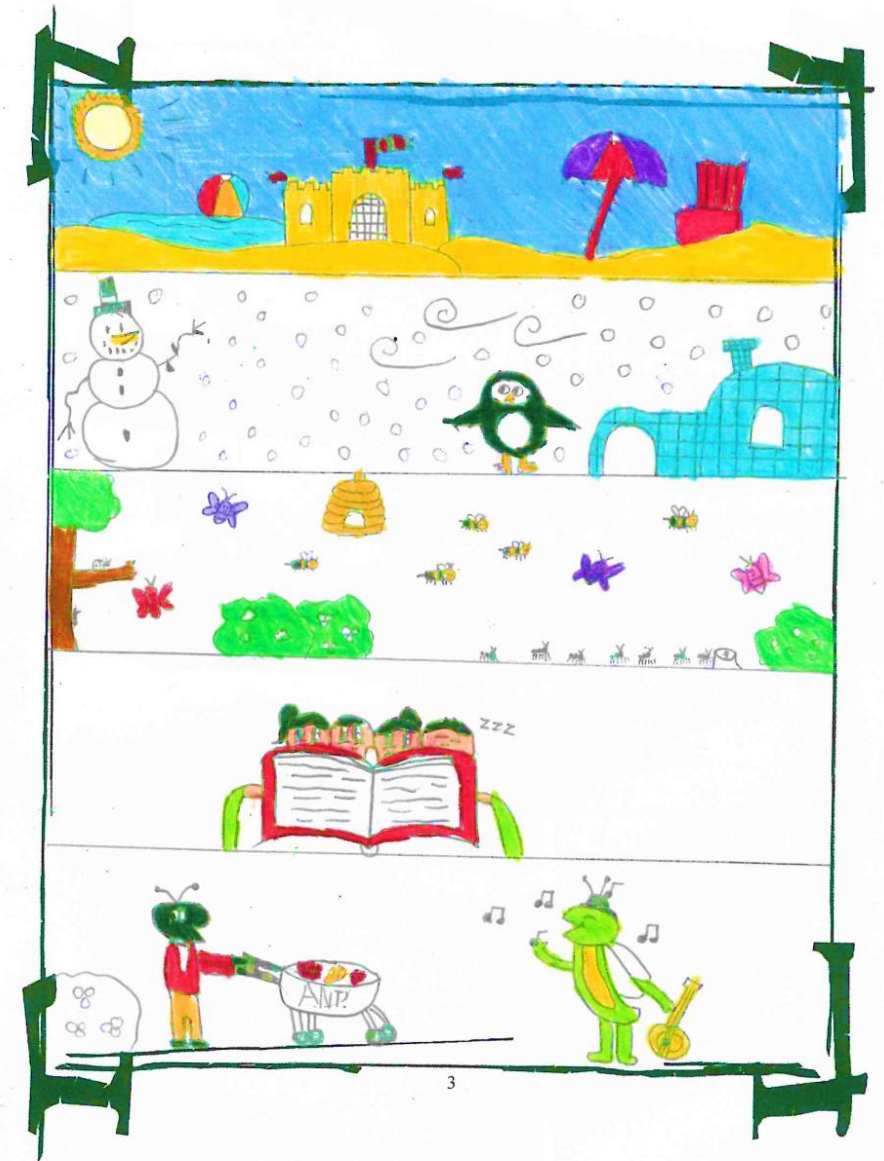
Summer The hottest quarter of the year.

Winter The coldest quarter of the year.

Insects Animals with 3 body parts
6 legs and 2 pair of wings

Narrator A person who tells the story
of event or experience.

Zest enjoyment, liveness, energy



Vocabulary



Samples from P3 & P4

she + Question Tags -

1. Siti is going to the library, isn't she?

they -

2. The boys were not playing soccer, were they?

he + did

3. Ravi drank the glass of milk, didn't he?

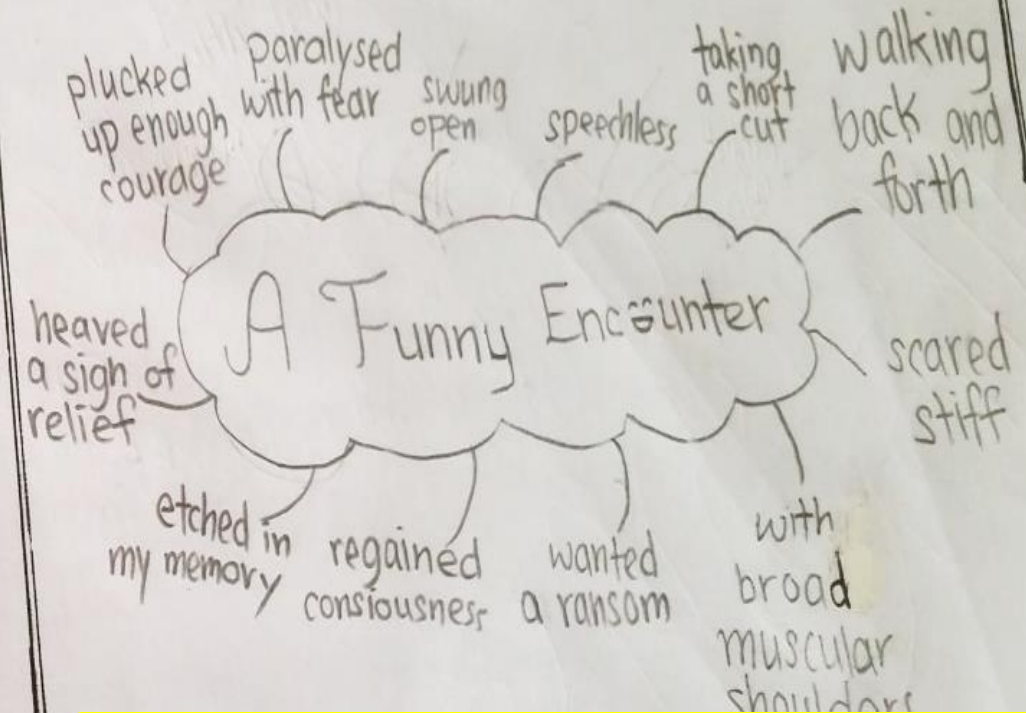
You + do

4. You like chocolate, don't you?

he +

5. Tom is coming with us, isn't he?

Grammar

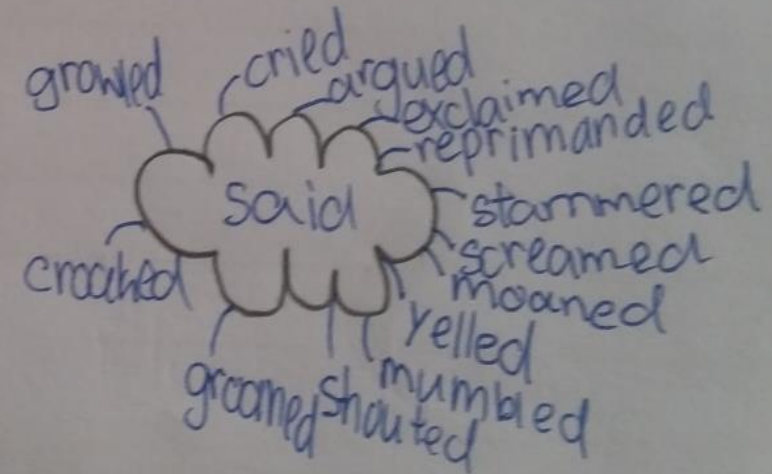
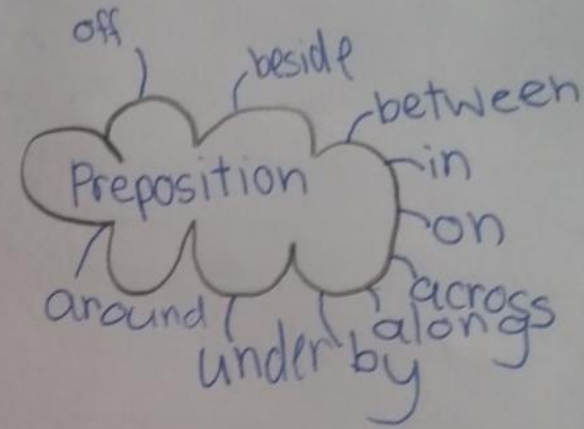
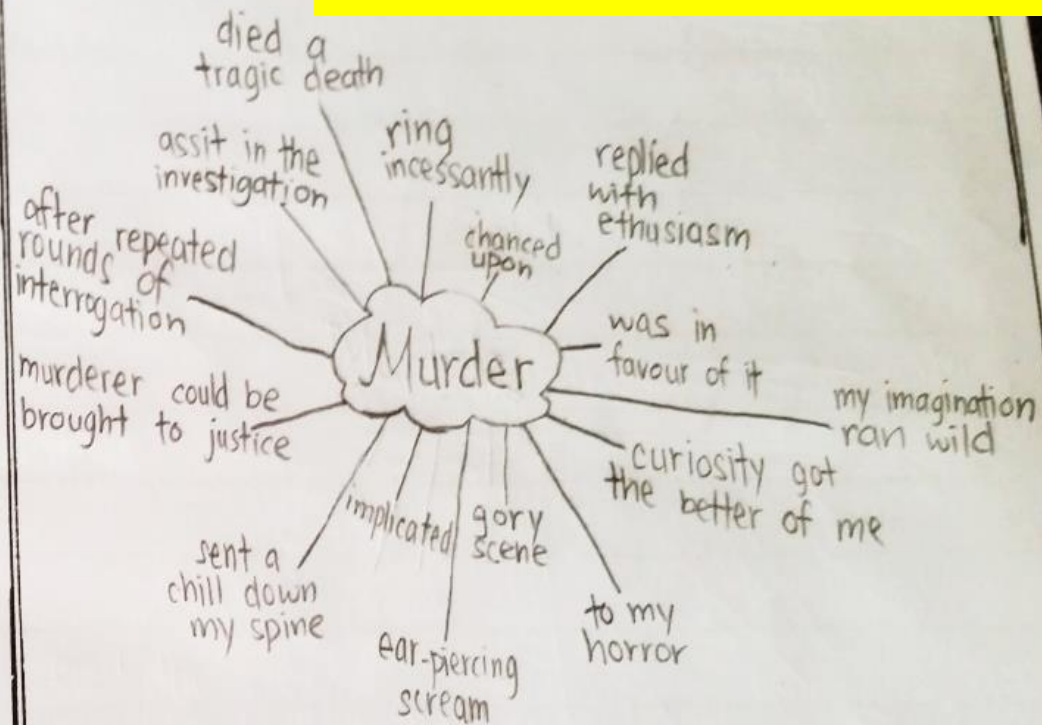


Brainstorming



Samples from P3 & P4

Mind Mapping



Samples from P5 & P6

Idioms

Fun with Idioms:

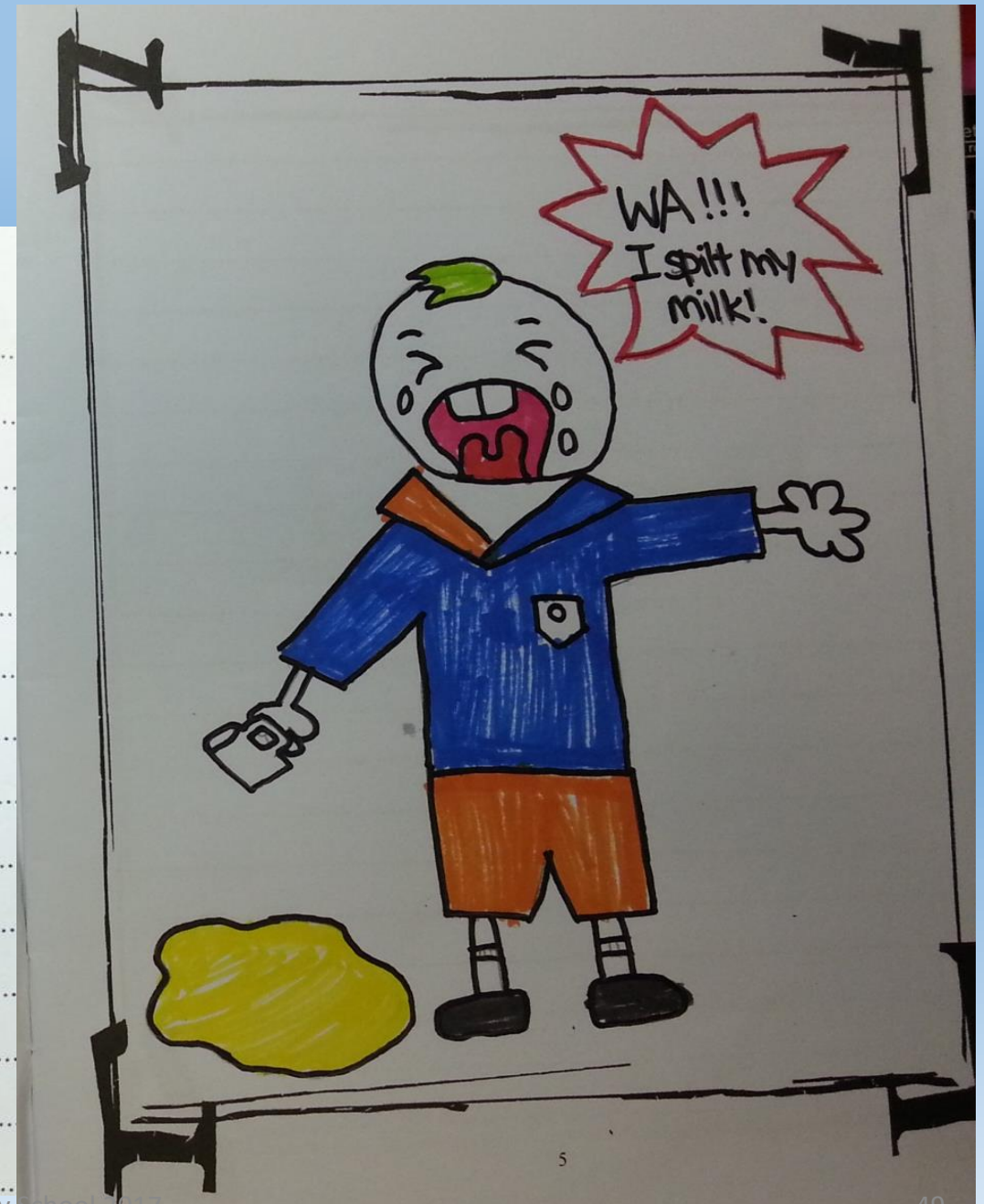
cried over spilt milk

Meaning →

when you complain about a loss from the past.

Sentence →

There's no point crying over spilt milk, it is over already.



Samples from P5 & P6

- Award Presentation
- Flashback (whenever I look at the trophy beside my desk; I will remember that memorable time...)
- Climax (after the courageous words from friend, I felt no longer nervous and walked confidently to the stage.)

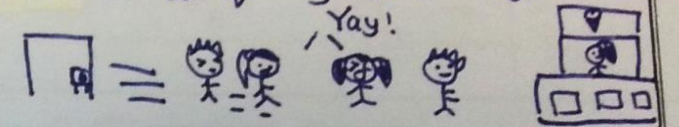
- Who? → Me
- When? → November, end of the year, morning
- Why? → To receive an award
- Where? → School hall
- What? → Have no courage to go up to the stage
- How? → Climax

Planning An Essay

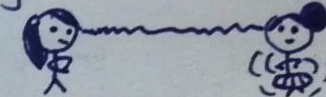
1. edgy - tense, nervous, or irritable.



2. Stream out - moved out quickly and in large numbers.



3. watching someone like a Hawk - observe something/someone carefully, closely.



4. Skimmed - looked over or read (something) quickly especially to find the main ideas.



5. over the moon - extremely happy, delighted

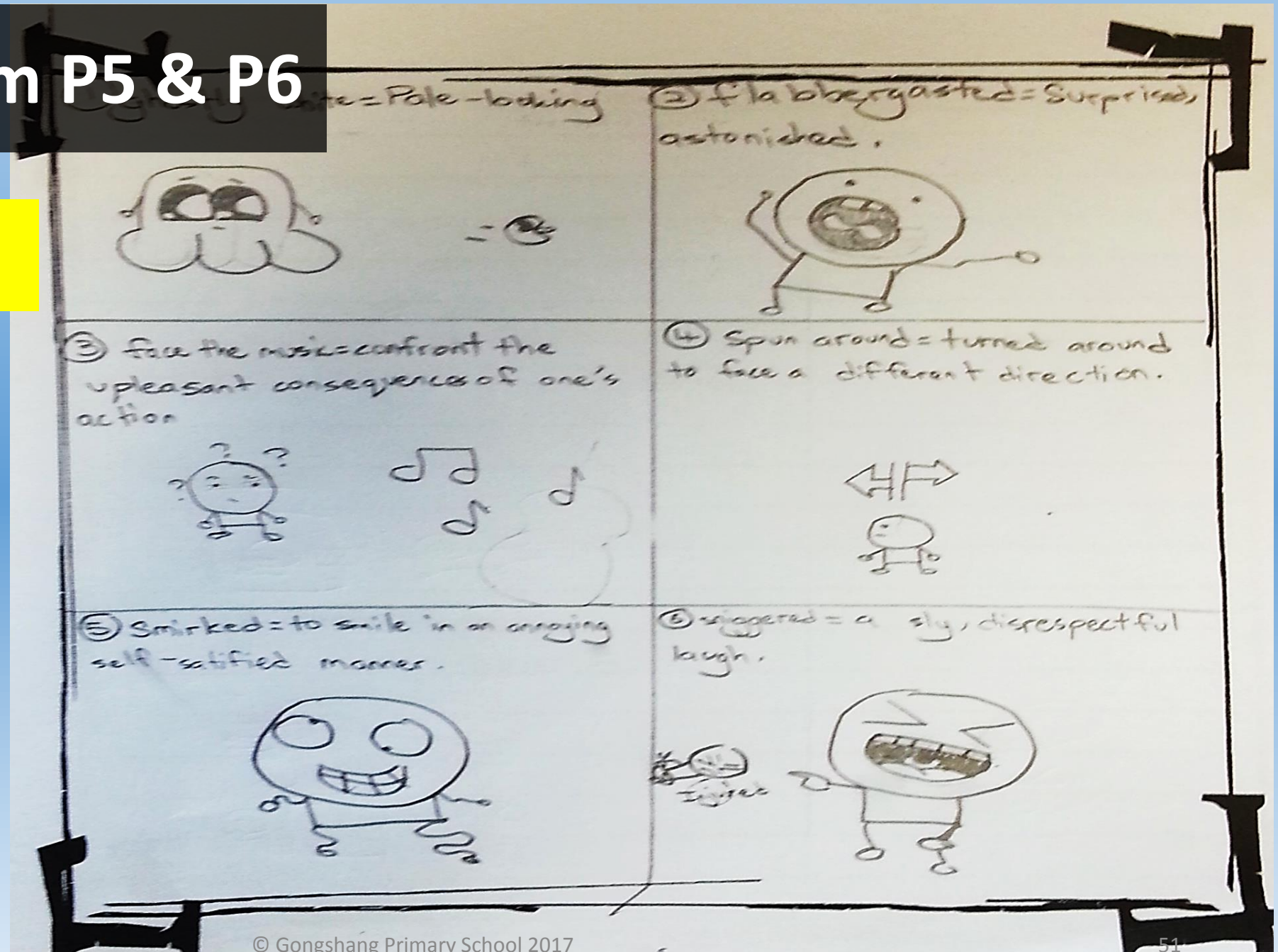


6. In seventh heaven - to be extremely happy



Samples from P5 & P6

Story map



WSA-EC

Journaling In Mathematics



Samples from P1

Math Journal

Length

Name: [Redacted]
Class: [Redacted] Date: 27-4-15



My insect is 8 linking cubes tall.
My friend's insect is 5 linking cubes tall.
My insect is longer.
My friend's insect is shorter.
Yue Yao's insect is the shortest.

27/4

Some key words related to length:		
short	shorter	shortest
long	longer	longest
tall	taller	tallest

Length

Name: [Redacted]
Class: [Redacted] Date: 27-4-2015



My insect is 5 linking cubes tall.
My friend's insect is 8 linking cubes tall.
My insect is shorter.
My friend's insect is longer.
Ethao's insect is the longest.

27/4

Some key words related to length:		
short	shorter	shortest
long	longer	longest
tall	taller	tallest



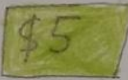
Sample from P1

Math Journal

OUR MATHEMATICS JOURNAL

Corners and Sides

Date: 8

Shape (Draw)	Name	Number of corners	Number of sides	Some examples
	rectangle	4	4	
	square	4	4	paper
	triangle	3	3	Sandwiches
	Circle			

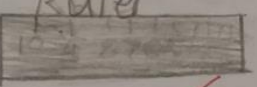
Teacher's Feedback:

Awesome work done. Super duper neat too. 😊

OUR MATHEMATICS JOURNAL

Corners and Sides

Date: 8 May 2015

Shape (Draw)	Name	Number of corners	Number of sides	Some examples
	square	4	4	eraser
	rectangle	4	4	
	circle	0	0	
	triangle	3	3	

Teacher's Feedback:

Cool examples you gave. You may want to draw arrows to show which parts you are showing the shape.

8/5



Samples from P4

Reflections

Why is it important to learn about area and perimeter???

Not only area and perimeter will come out in examinations, we need them in our DAILY LIFE. If you want to retille your living room, you need to know the ^{area} perimeter so you can use the right kind of tile. If you want to buy a desk in your bedroom, you need to know the area so you know what size you can buy.

gun

My Reflection

The term 'perimeter' means... the total length around the figure/outline. The perimeter is NOT equal to the number of sides.

5cm



10cm

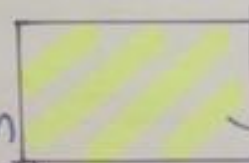
→ Perimeter

Method:

$$\text{Perimeter} = (5 \times 2) + (10 \times 2) = 30\text{cm}$$

The term 'area' means... the total amount of surface around the figure/total area. The formula to find the area is length (L) $\times$ breadth (B). Length is the 'longer' one while breadth is the 'shorter' one.

The unit for area is 'm²/cm²'



4cm

→ Area

Method:

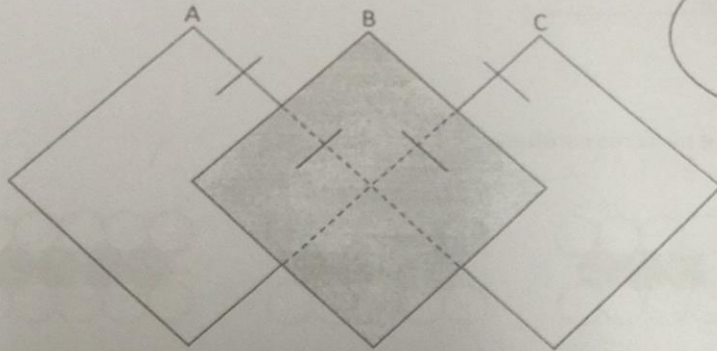
$$\text{Area} = L \times B = 2 \times 4 = 8\text{cm}^2$$



Samples from P4

Investigative Lesson on Area and Perimeter

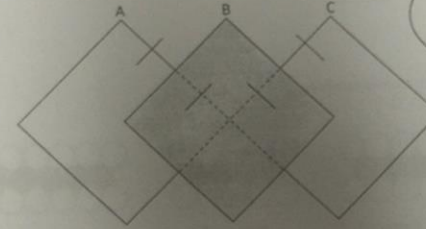
2. The figure below is made up of 3 identical squares, A, B and C.
Square B is placed on top of Squares A and C.
The perimeter of the figure is 128 cm.



Take note of the
overlapping parts. Are
these parts included in
the total area?

- a) Find the length of one side of the squares.
b) Find the area of the figure.

2. The figure below is made up of 3 identical squares, A, B and C.
Square B is placed on top of Squares A and C.
The perimeter of the figure is 128 cm.



Take note of the
overlapping parts. Are
these parts included in
the total area?

- a) Find the length of one side of the squares.
b) Find the area of the figure.

Answer : (a) _____ [1]
Answer : (b) _____ [3]



Reflections

iPhone Summary

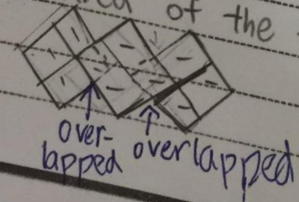
Today, I learnt that the overlapping part is not included in an area because if you find the overlapping part you would be finding more than you need.

iPhone Summary

Today, I learnt that the overlapping part is not included when you are finding the area because if you include the overlapping part you would be finding more than you need instead of the figure.

iPhone Summary

Today, I learnt that overlapped parts should not be included in the entire figure as it is already counted in the parts which are not overlapped. You have to find one side of the figure before you can find the area of the figure.



WSA-EC

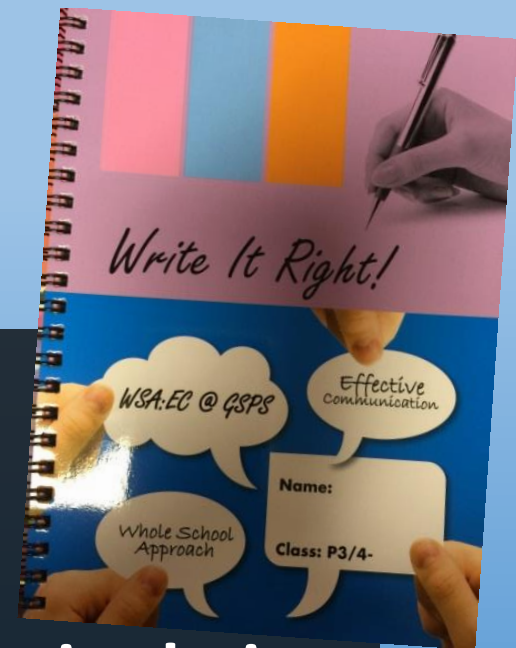
Journaling In Science

Science
P3 – P6



Flash it, Write it!

Pupils have to write sentences using the scientific terms from the flashcards correctly and make their learning visible by writing these sentences in their **Write It Right journal**.



attract

unlike poles

like poles

repel

North pole

South pole



Flash it, Write it!

P3 Lesson on Magnets

Unlike poles attract and like poles repel.

Magnets can attract magnetic materials.

The unlike poles are facing each other and hence the poles will attract.

The pull of a magnet is strongest at its poles.

Magnets cannot attract magnetic materials.

If you let a magnet dangle around it will always point in the same direction.

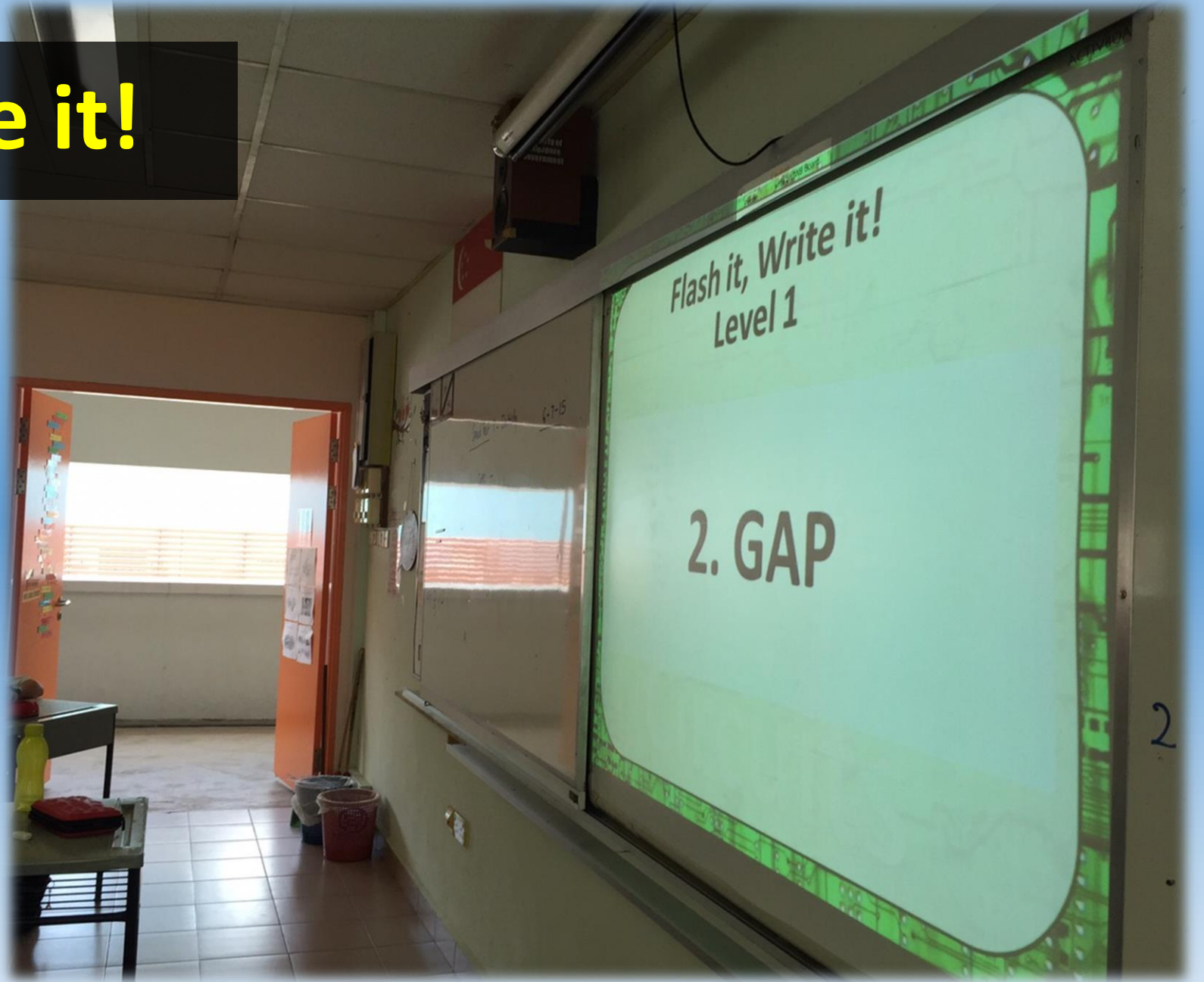
1. Unlike poles attract and like poles repel.
2. Iron, steel, nickel and cobalt are examples of magnetic materials.
3. All magnets have a N-pole and S-pole.
4. You can make an object made out of a magnetic material into a magnet.
5. The pull of the magnet is strongest at its poles.
6. Maglev trains use powerful magnets to repel.



Flash it, Write it!

Level 1

P5 Lesson on Electrical Systems



Flash it, Write it!

Level 1

metal tip

metal casing

parallel

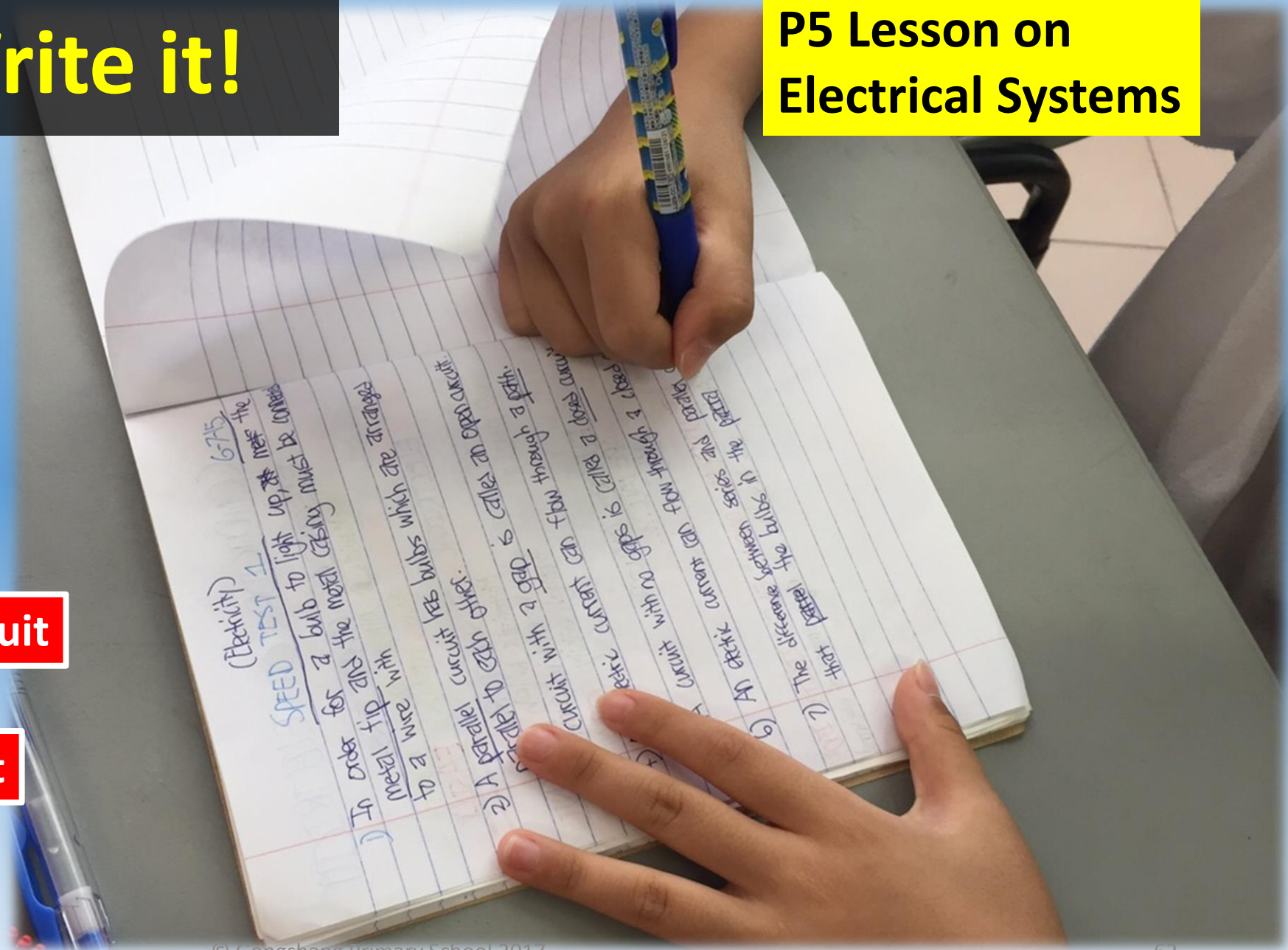
open circuit

series

close circuit

gap

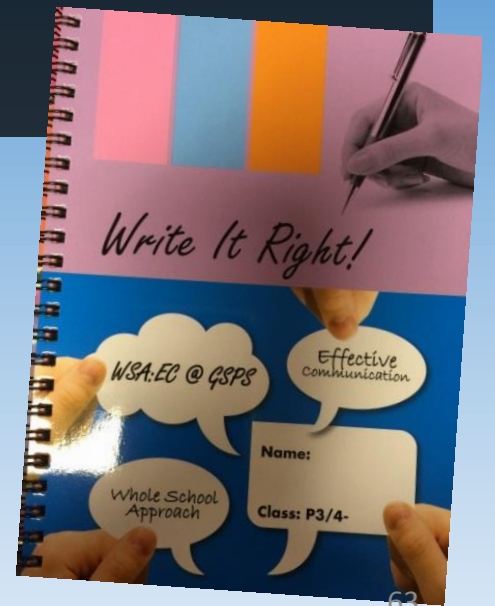
P5 Lesson on Electrical Systems



Let's Find Out!

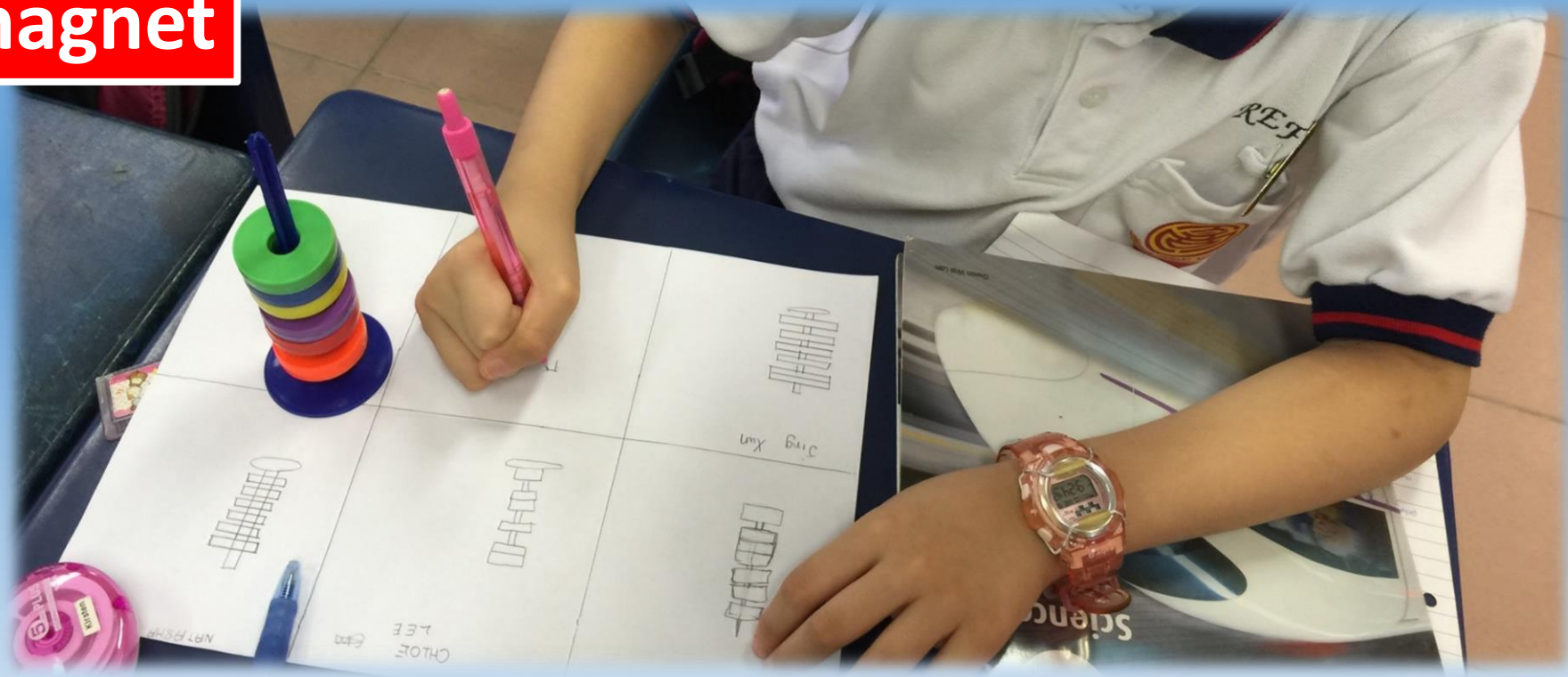
Investigative Activity

Pupils to investigate a certain phenomenon/concepts and communicate their observations and record the results/observations in the **Write It Right**.



Let's Find Out!

Investigating the poles of the magnet



Making thinking and learning visible



05/10/2017

© Gongshang Primary School 2017

64

Let's Draw!

Drawing/Illustrations of concepts

Pupils can illustrate the science concepts using scientific terms. This activity can help to assess pupils' conceptual understanding of the topic.

(individual/paired work)

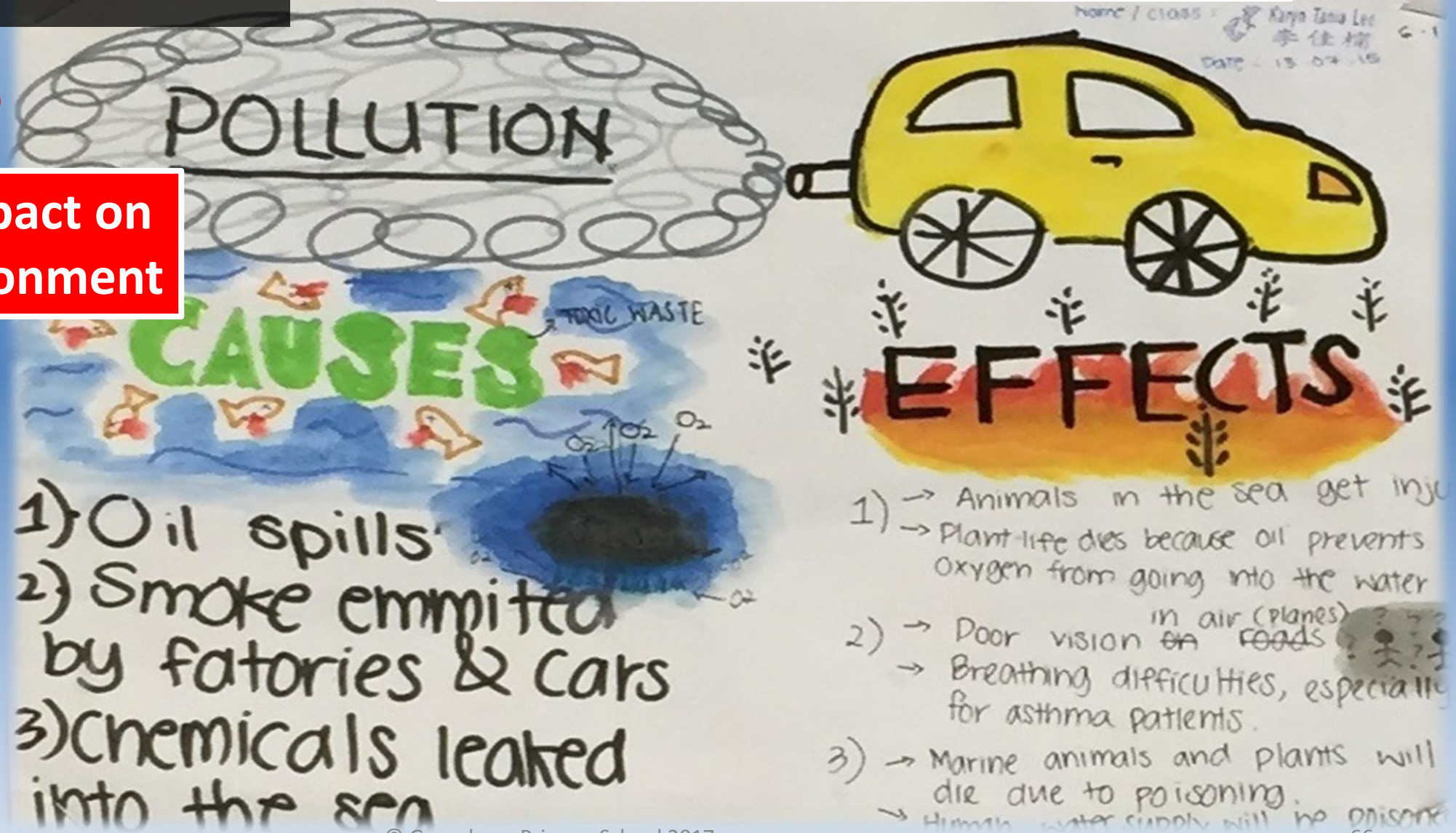


Let's Draw!

Making thinking and learning visible

Primary 6

Man's Impact on
The Environment



Let's Draw!

Primary 6

Man's Impact on The Environment

Making thinking and learning visible

GLOBAL
• warming •
{ CAUSES AND EFFECTS }

When burning of trees occurs, carbon dioxide is produced.

When more trees and fuels are burnt, more of these gases (greenhouse gases) are produced.

As a result, the average temperature of the Earth's surface is increasing, known as global warming.

CO₂ traps the sun's heat and prevent it from escaping into space.

= floods & droughts, etc.

FLOODS are a RESULT of global warming

If the temperature of the Earth keeps on increasing, everybody will die.

~~PEOPLE?~~

GLOBAL WARMING	
causes	effects
> burning of fuels	> overage t temp. of the Earth's surface increases
> burning of trees	
> pollution	ice caps on Earth will melt & sea levels will rise
	violent storms and wild fires

Name: Sandy Chua
Class: 6.1



Flowchart!

Pupils to link the flashcards to construct answers based on the process skills questions using the scientific terms.



Flowchart!

Primary 3

passes through

digested food

blood

Making thinking and learning visible

What happens to the digested food
in the small intestine?

Keywords: blood, walls of small intestine,
digested food, different parts of the body

Digestion in small intestine



Digested food passes through the walls of
small intestine into the blood.



The blood carries the digested food into the
different parts of the body.

Ans: The digested food passes through the
walls of the small intestine into the
blood which will then be carried to
the different parts of the body.



Flowchart!

Making thinking and learning visible

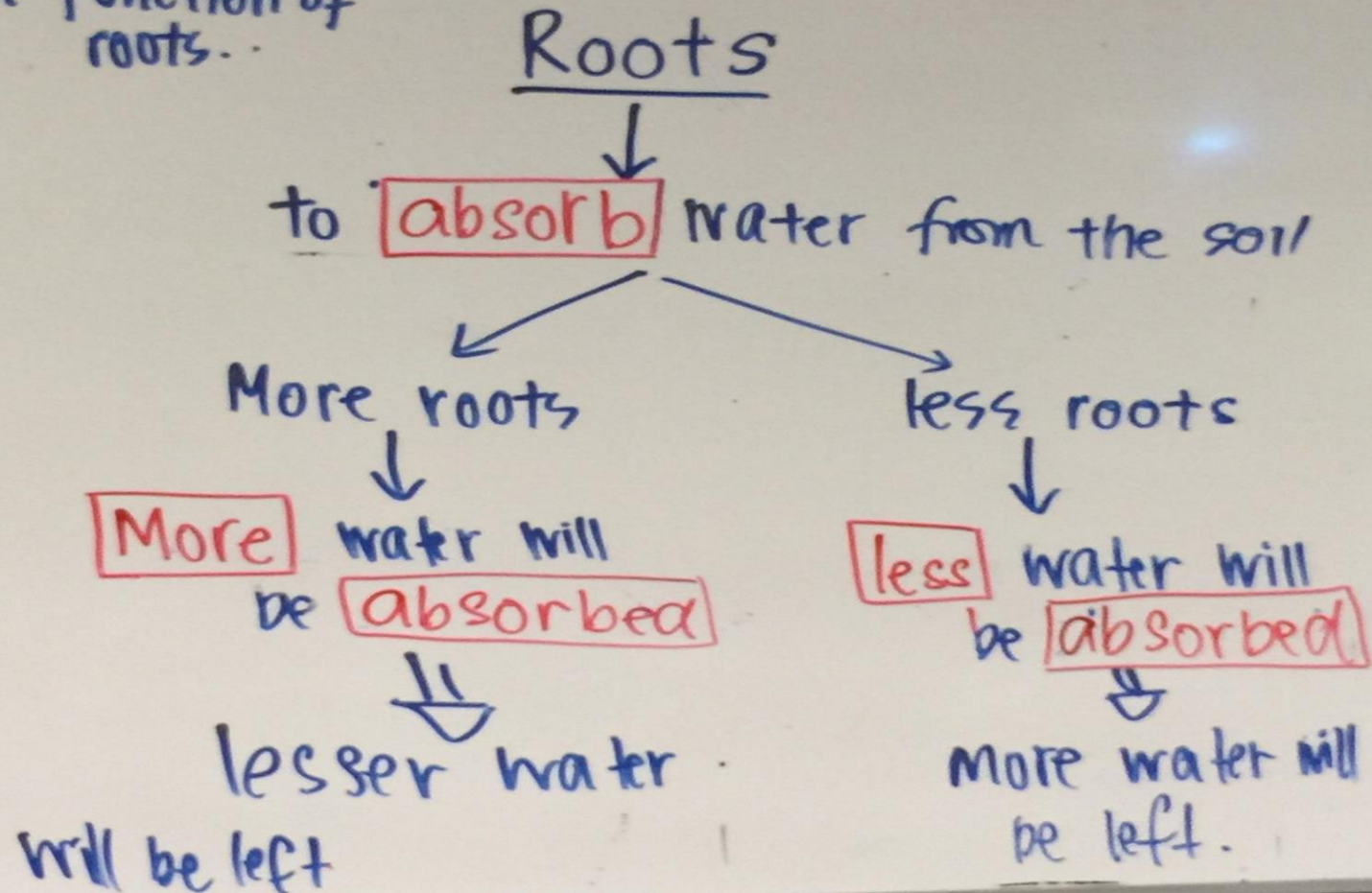
Primary 6

Concept: function of roots...

absorb

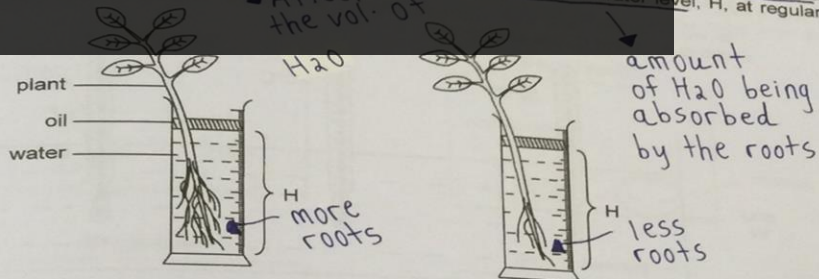
more roots

less roots



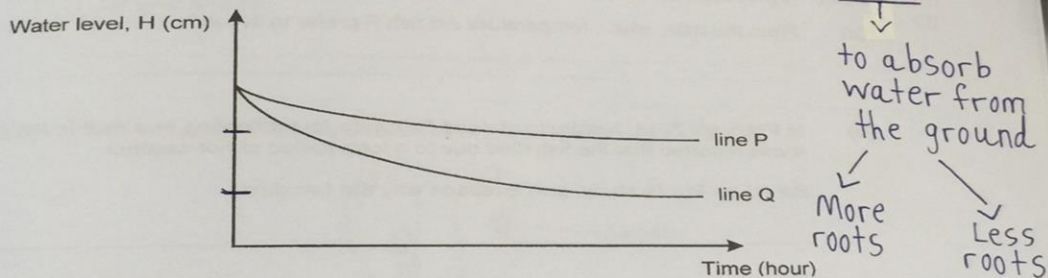
Flowchart!

Making thinking and learning visible



- (a) What is the purpose of the layer of oil in this experiment?
 The oil is to prevent water from evaporation.
 H is to prevent the loss of water from evaporation.

The results obtained are as shown.



- (b) Which line, P or Q, represents the results obtained for the plant with fewer roots? Explain your answer.

Line P. Less root absorbs less water.

Line P. The plant with fewer roots taking less water so more water was left in the measuring cylinder.

(Go on to the next page)

SCORE	2
-------	---

more water will be left

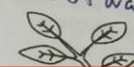
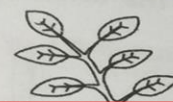
0009/02(B)/2014



05/10/2017

© Gongshang Primary School 2017

most of the roots from one of the plants. She then recorded the water level, H, at regular time intervals.



Roots

to absorb water from the ground

More roots

Less roots

More roots it will absorb more water
line P

Less roots it will absorb less water.
line Q

less water will be left

more water will be left.

Roots

to absorb water from the ground

More roots

Less roots

More roots it will absorb more water
line P

Less roots it will absorb less water.
line Q

less water will be left

more water will be left.

- (b) Which line, P or Q, represents the results obtained for the plant with fewer roots? Explain your answer.

Line P. It is because it has lesser roots to absorb the water. The plant fewer roots taking less water, so more water left in measuring cylinder.

Read It!

Pupils to read newspaper article or any article and they are to reflect or give comments on the article. They may also ask questions to clarify with one another.



Read It!

Primary 6

1. Describe your feelings when you first read the article. Explain why you felt that way.

I felt relieved. The world is soon running out of electricity with its high demand and we need a renewable source of energy. Although many people may find it disgusting, it is less costly and more eco-friendly!

2. If you were a scientist, briefly write down what you would like to invent to help make the world a better place to live in. How will this invention benefit the people?

I would invent a global water plant to desalinate seawater. This would generate more clean water to the people in 3rd world countries who do not have access to clean water.



05/10/2017

© Gongshang Primary School 2017

Gongshang Primary School
Have You Heard About It?

Date: 26th May 2015

070315

Loo and behold: Urine-powered lights

LONDON - British scientists have unveiled a toilet that unlocks energy stored within urine to generate electricity, which they hope could be used to light remote places such as refugee camps.

Students and staff at the University of the West of England in Bristol are being encouraged to use the prototype urinal, which has been developed with aid agency Oxfam and is currently located on campus. If it is found to provide a reliable source of power, the researchers hope it can be installed in refugee camps to provide a constant supply of electricity and light.

"It is always a challenge to light inaccessible areas far from a power supply," explained Mr. Andy Bastable, head of water and sanitation at Oxfam.

"This technology is a huge step forward. Living in a refugee camp is hard enough without the added threat of being assaulted in dark places at night. The potential of this invention is huge."

Each unit could eventually cost about €825 (\$\$1,240) to build and install, providing an "everlasting" source of power, according to research team leader Ioannis Ieropoulos.

The units contain bacteria that break down the chemicals in urine, releasing energy in the form of electricity, which is stored in a fuel cell.

"This technology is about as green as it gets, as we do not need to utilise fossil fuels and we are effectively using a waste product that will be in plentiful supply," said Dr Ieropoulos.

AGENCE FRANCE-PRESSE

1. Describe your feelings when you first read the article. Explain why you felt that way.

I felt relieved. The world is soon running out of electricity with its high demand and we need a renewable source of energy. Although many people may find it disgusting, it is less costly and more eco-friendly!

2. If you were a scientist, briefly write down what you would like to invent to help make the world a better place to live in. How will this invention benefit the people?

I would invent a global water plant to desalinate seawater. This would generate more clean water to the people in 3rd world countries who do not have access to clean water.

Great idea!

26/5

WSA-EC

Year 3 (2016)

**Heightening Awareness In Effective
Communication
(HA in EC)**

Sustaining Communication Channels



Sustaining Communication Channels

- **Public Speaking for Student Leaders**
- **Continued Focus on Vocabulary**
- **Word Splash**
- **Journaling**



Public Speaking Programme

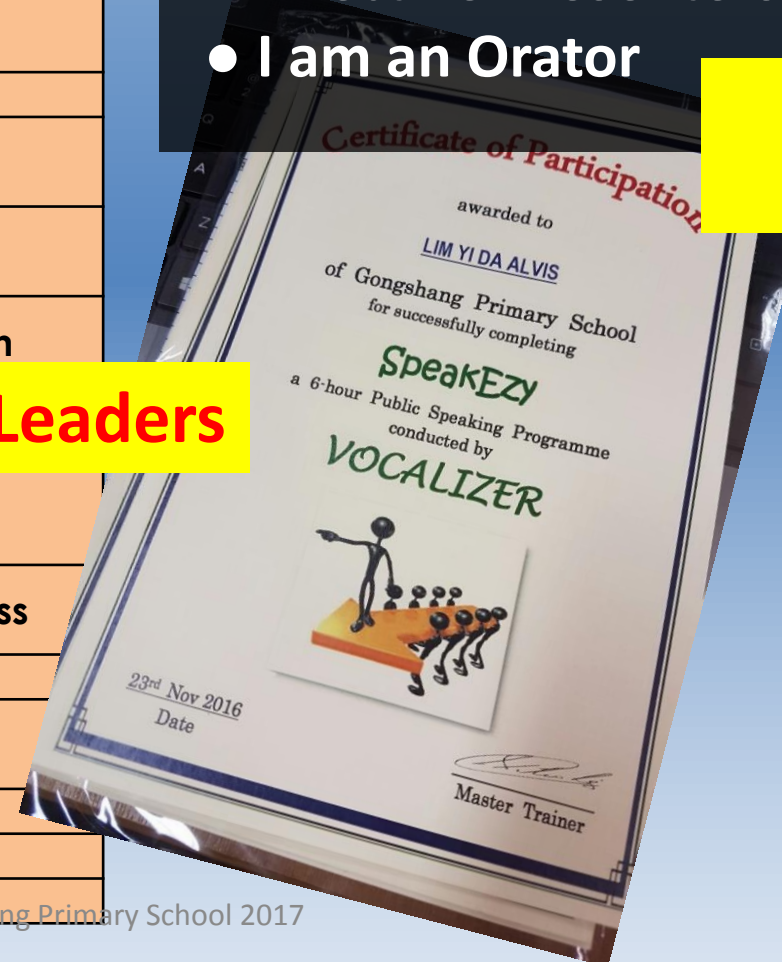
SpeakEzy – Oral Communication Course

No.	Lesson Title	Brief Description of Lesson
1	Introduction	Skills involved in communication
	Can I be heard?	How to Empower my Voice
	Can I be understood?	How to Develop Good Articulation
	Am I expressive?	How to Hold the Audience's Attention
		For P3 & P4 Student Leaders
2	Introduction to Presentation	Different methods of Presentations
	The PRES Plan	Fast Forward Way to Put a Point Across
	PCFAT	Speaking from all Angles
	PPF and TRIPLETS	Giving an Impromptu Speech : To Inform/Persuade/Encourage
	Speak Up!	Individual Presentations

COMMUNICATION SKILLS SERIES

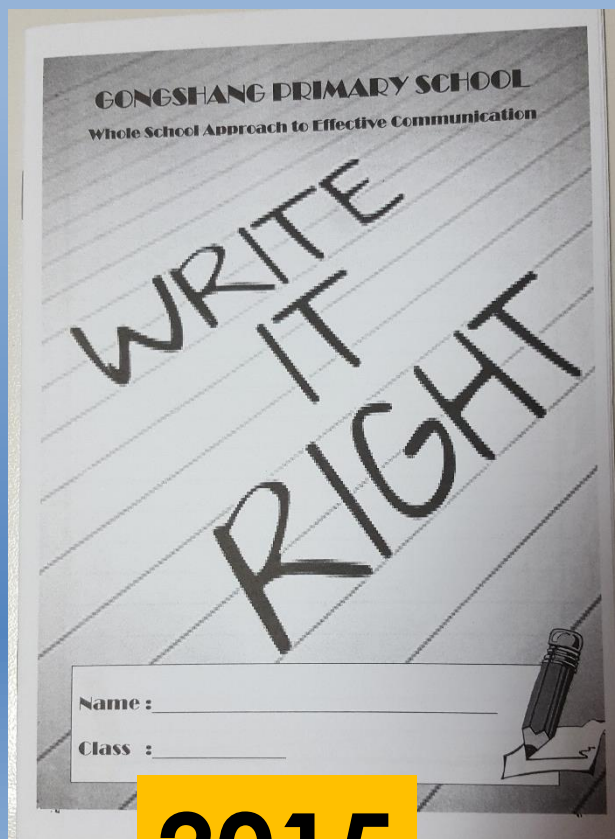
- Effective Presenters
- I am an Orator

For P2 Student Leaders



05/10/2017

© Gongshang Primary School 2017



2015



2016/2017



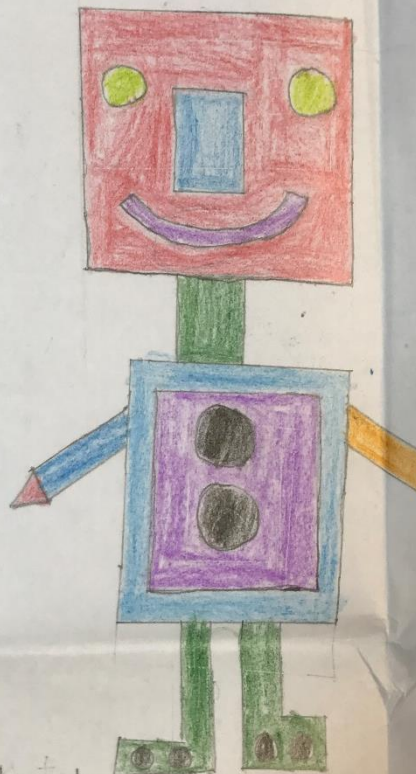
2016/17 Samples of Pupils' Work

What I learnt about
"Continuous Tense."



The boy is going to school.

The boy is carrying his school bag.

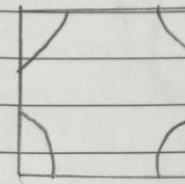


10 rectangle
2 triangle
8 circle
1 Square

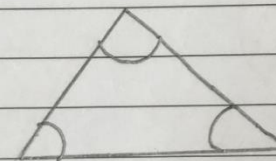
Robot

Shapes

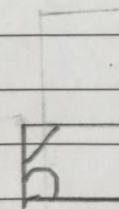
I have 4 sides and 4 corners.
All my sides are the same.
I am a Square.



I have 3 sides and 3 corners.
I am a triangle.



I have 4 sides and 4 corners.
I have 2 length and 2 bread.
I am a rectangle.



Samples of Pupils' Work

2016/17

The Gruffalo



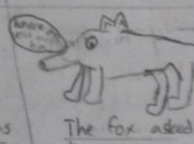
Everyone is terrified of the Gruffalo.



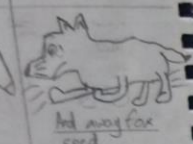
The Gruffalo got tricked by the mouse.



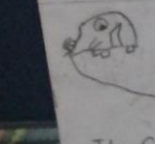
A Gruffalo has terrible tracks and terrible claws.



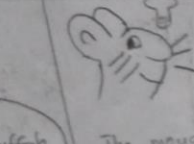
The fox asked the mouse where the Gruffalo was.



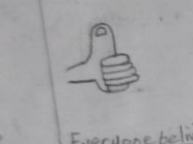
And away the fox sped.



The Gruffalo has a terrible voice.



The mouse is very intelligent and quick-thinking.



Everyone believed the mouse.

Phrasal Verb 15 Feb 2017

the search because of the worsening weather conditions.

16 Call on Meaning: to stop at a house or other place for a short time to see someone or do something. Example: "Shall we call on James on our way home?" "I suggested to Lily."

17 Call out Meaning: to say aloud. Example: The newspaper vendor called out the day's headlines to the passerby.

Phrasal Verb 15 Feb 2017

the search because of the worsening weather conditions.

16 Call on Meaning: to stop at a house or other place for a short time to see someone or do something. Example: "Shall we call on James on our way home?" "I suggested to Lily."

17 Call out Meaning: to say aloud. Example: The newspaper vendor called out the day's headlines to the passerby.

Phrasal Verb 15 Feb 2017

the search because of the worsening weather conditions.

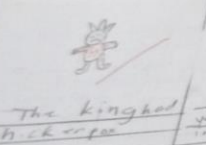
16 Call on Meaning: to stop at a house or other place for a short time to see someone or do something. Example: "Shall we call on James on our way home?" "I suggested to Lily."

17 Call out Meaning: to say aloud. Example: The newspaper vendor called out the day's headlines to the passerby.

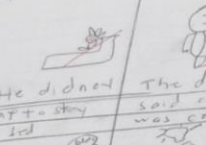
The King and the King's Clowns



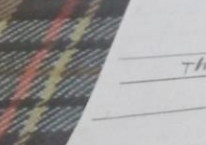
The king had a clown.



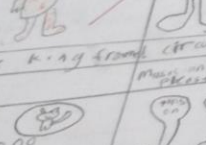
He didn't want to stay in bed.



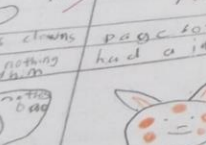
The doctor said the king was very fat.



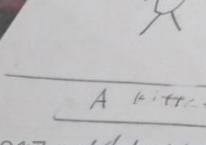
The king found the clowns.



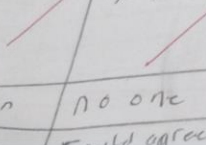
They were very funny.



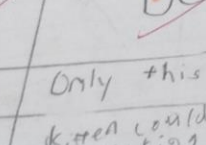
The king had a clown.



A kitten.



No one could agree.



Only this kitten could agree.

Maths

4x4=16
10x4=40
400x4=1600

a) 7x40=280
b) 80x7=560
c) 9x800=7200
d) 500x9=4500

11x2=22
12x2=242
a) 30x2=60
b) 22x4=88
c) 113x2=226
d) 40x2=826

56 137 72
x 12 x 123 x 15
112 411 360

Maths

86 278 149
x 13 x 22 x 14
258 834 2086

292 445 999
x 13 x 13 x 13
1782 1335 2997

263 232 1240
3/789 4/731 7/8431

189 131 1431
18 13 14
9 11 14
9 11 14

The Gruffalo



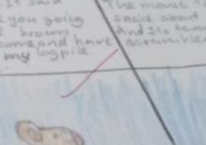
A mouse was walking through the deep dark woods. A fox saw a mouse and the mouse ran away.



The mouse said to the fox, 'I'm a mouse and I'm very small. I can fit in the smallest hole.'



The mouse said to the fox, 'I'm a mouse and I'm very small. I can fit in the smallest hole.'



The mouse said to the fox, 'I'm a mouse and I'm very small. I can fit in the smallest hole.'



The mouse said to the fox, 'I'm a mouse and I'm very small. I can fit in the smallest hole.'



The mouse said to the fox, 'I'm a mouse and I'm very small. I can fit in the smallest hole.'



Samples of Pupils' Work

2016/17

NAME: Ilya Q...
CLASS: P2
MATCH THE WORDS TO ITS CORRECT MEANING

Ominous	not securely held or in position, dangerously likely to fall or collapse.
Surreptitious	a person who is trained to do medical work, especially emergency first aid, but is not a fully qualified doctor.
Precarious	done in a secret way
Paramedics	giving the worrying impression that something bad is going to happen
Render	provide or give (a service, help, etc.)
Consequences	unhappy, uneasy, or uncomfortable
Elated	a result or effect, typically one that is unwelcome or unpleasant
Miserable	very happy or proud; jubilant, in high spirits

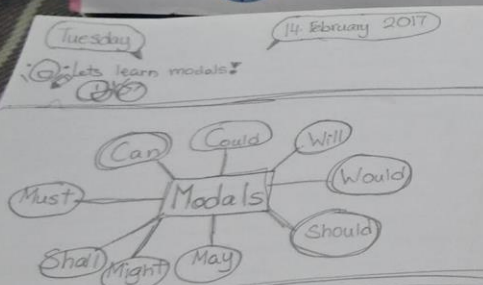
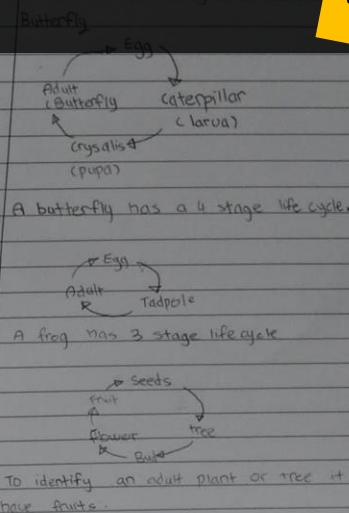
Great Job!

Meaning: follow
Example: You have to abide by the referee's decision.

2. add in
meaning: to include something with something else.
Example: Don't forget to add in the flour after beating the eggs.

3. adhere to
meaning: follow, stick firmly to something.
Example: We have to adhere to the rules of the game to ensure fair play.

4. amount to
meaning: to add up to something, to make something as a total.
Example: Jim's total earnings for today amount to a thousand dollars.



NOTE: Any word that comes after a modal should be a 'root' word or we call it base form of a word.

Example:

Eg 1 > I will do my work. (✓)
I will doing my work. (x) (✓) ~

Eg 2 > She must promise to play with me.
She must promises to play with (x)

Area
Area of square = $L \times B$
 2×2
 $= 4\text{cm}^2$
Area of 4 square = 4×4
 $= 16\text{cm}^2$

Area 30 sept 2016
Perimeter
- The outline

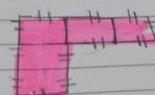


Figure A
perimeter
is 12 cm
Primary 4
Perimeter

L = 6cm Length

B = 3cm

© Gongshang Primary School 2017 40 - 6 + 6 + 3 + 3

27. come along

Meaning: accompany

Example: You're welcome to come along if you like.

28. confide in

Meaning: To tell someone you trust about personal things that you do not want other people to know.
Example: He confided in his best friend about the examination.

29. caught up

Meaning: to pay

Example: He had to caught up a large sum of money to pay his medical bills.

30. count on

Meaning: rely on



05/10/2017

Feedback & Suggestions

- **Give teachers blank cards to fill up new vocabulary words that can then be displayed on the wall chart.**
- **Meanings can be written behind the cards so that all pupils can turn over to check meanings.**

Success Factors

- **Passionate EC champions**
- **Whole School buy-in**
- **High SES (English-speaking homes)**
- **Align to MOE's direction: 21CC**
- **Align to School's Vision**



Key Challenges

Challenges	Solutions adopted
Teacher Buy-in	I Do-We Do-You Do See-Think-Wonder
Class size	Peer/group assessment e.g. FAST kits; Moo-O
Time constraint (e.g. too few periods for Science)	Integration across subject (Teachers' deployment: dual specialisation)



What's Next?

Critical & Inventive Thinking

by Robert Diyanni

Critical & Creative Thinking Strategies for Classroom Inquiry

by Susan Wilks



I Do. We Do. You Do. 2017

“I DO WE DO YOU DO” model is a simple and catchy way to convey the essence of explicit instruction.

- **I DO** phase of a lesson **involves telling students what they need to know** and **showing them how to do** the things that they need to be able to do.
- **WE DO** is the second phase and it **involves doing tasks together**.
- **YOU DO** phase of a lesson involves **students practising** what they have learnt **by themselves**.



See-Think-Wonder

(Routine for Introducing and Exploring Ideas)

Thinking Routines are patterns of behaviour that :

- **are used repeatedly**
- **become ingrained in teachers and students**
- **become flexible over time**

Visible Thinking Routine

See-Think-Wonder

- What do you **see**?
- What do you **think**?
- What does it make you **wonder**?

References

Hooker, T. (2013). *Peer Coaching: A review of the literature. Waikato Journal of Education. Hamilton, New Zealand: Waikato Institute of Technology (Wintec). Vol 1, Issue 2: 2013.*

Robertson, J. (2005). *Coaching leadership: Building educational leadership capacity through coaching partnerships. Wellington: New Zealand: NZCER Press.*



Contacts

- choo_lisa@moe.edu.sg
- lata_menon@moe.edu.sg
- widayu_kemat@moe.edu.sg

