Promoting
STEAM Education
at the Primary Level for
Knowledge Exploration and
Innovative Experimentation

SKH Lui Ming Choi
Memorial Primary School

Ms Sharen Lam, PSMCD
Ms Priscilla Sit, English Panel Chair

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Outline of the session

Case sharing

Rationale and school major concerns

Objectives, strategies, issues to explore, overview

"STEAM in English" on the move

Mini-exhibition

Learning and teaching materials, student work

Professional exchange

Round up

Outcomes and takeaways

Let's support our students to explore the world of STEAM education!

Rationale

Why STEAM education?

VASK

Values   **S**kills

Attitudes   **K**nowledge

National Identity

Proper Values and Attitudes

Knowledge of Key Learning Areas

Language Skills

Generic Skills

Reading and Information Literacy

Healthy Lifestyle

Whole person development

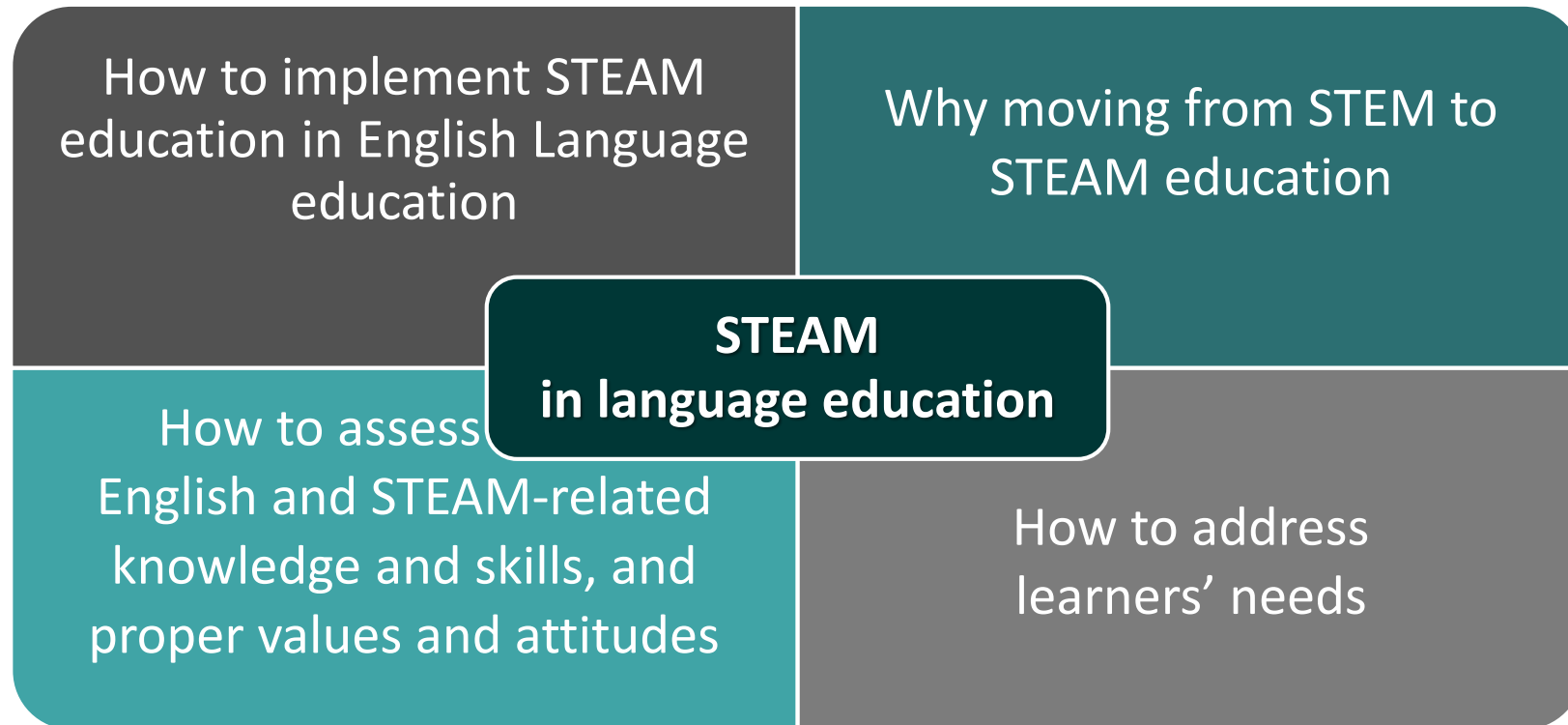# School major concerns

STEAM education

Values education
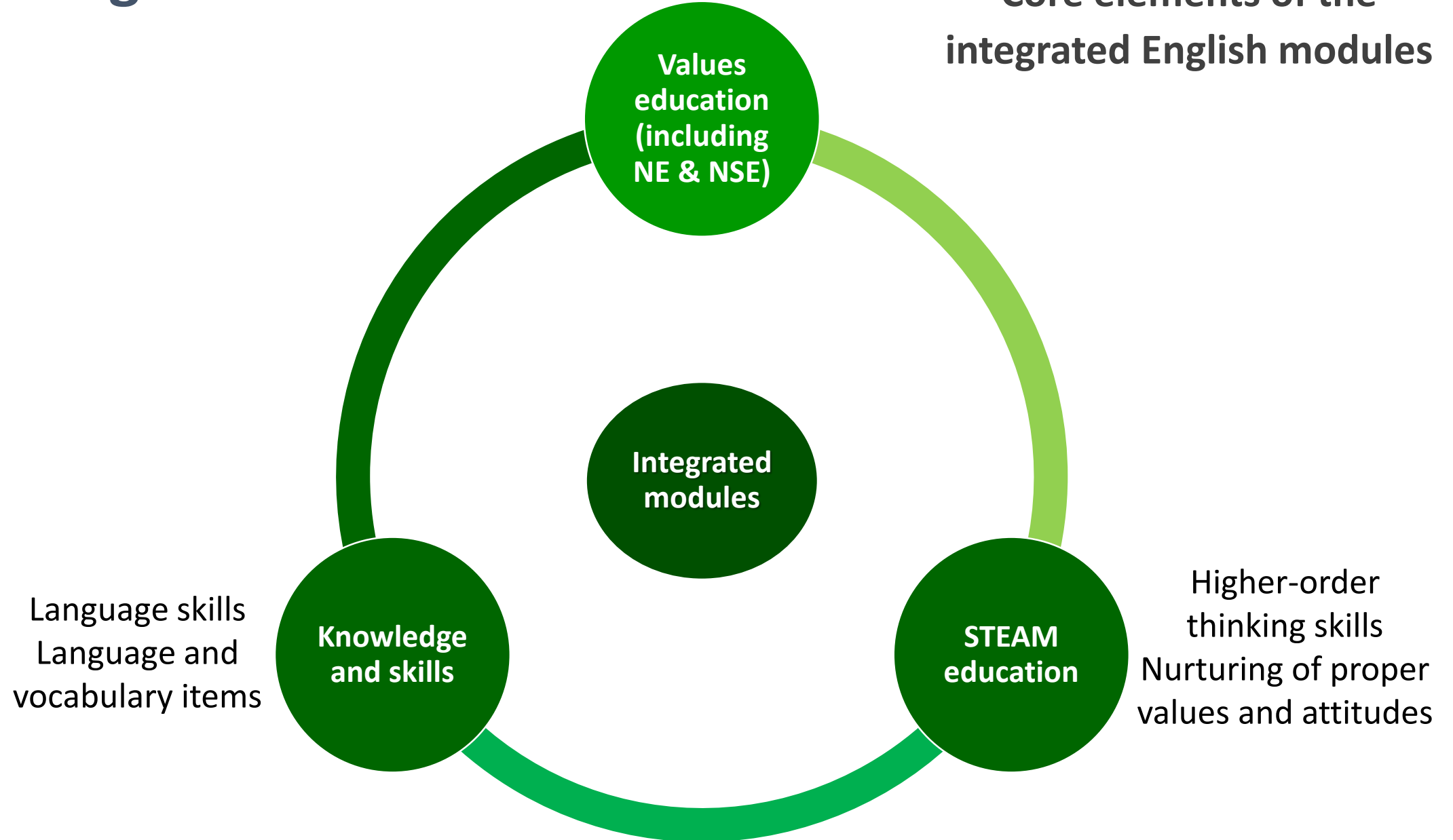
STEAM for all
STEAM for fun
STEAM in diversity

Objectives

- Through the sharing, we aim to explore with you the following issues:

How to implement STEAM education in English Language education	Why moving from STEM to STEAM education
How to assess English and STEAM-related knowledge and skills, and proper values and attitudes	How to address learners' needs

**STEAM
in language education**

Design of the modules

Core elements of the integrated English modules

Values education (including NE & NSE)

Integrated modules

Knowledge and skills

STEAM education

Language skills
Language and vocabulary items

Higher-order thinking skills
Nurturing of proper values and attitudes

"STEAM in English" on the move
Steps to take

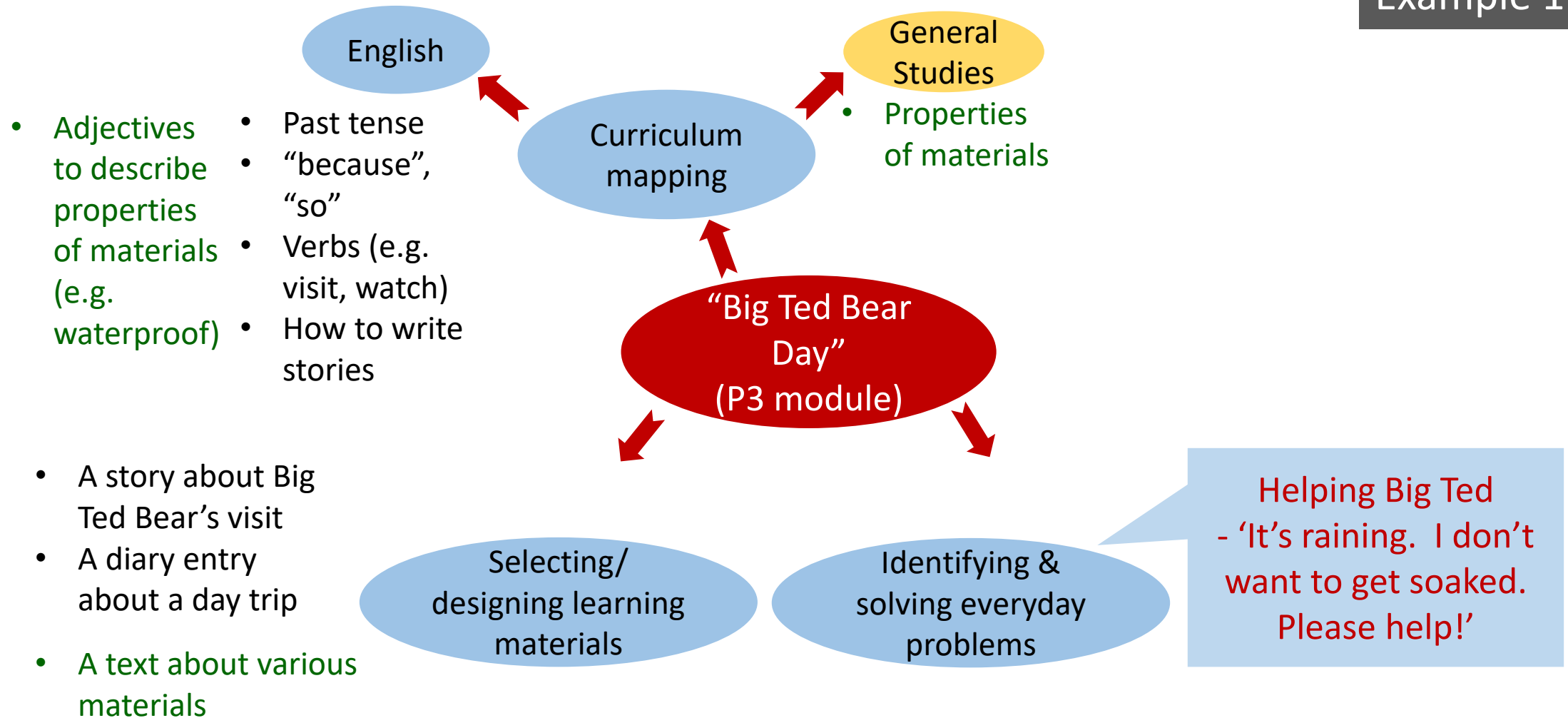**Curriculum mapping**

Selecting/ designing learning materials

Identifying and solving everyday problems

Identifying strategies

English

General Studies

• Properties of materials

Curriculum mapping

• Adjectives to describe properties of materials (e.g. waterproof)

• Past tense
• "because", "so"
• Verbs (e.g. visit, watch)
• How to write stories

"Big Ted Bear Day"
(P3 module)

• A story about Big Ted Bear's visit
• A diary entry about a day trip

• A text about various materials

Selecting/ designing learning materials

Identifying & solving everyday problems

Helping Big Ted - 'It's raining. I don't want to get soaked. Please help!'

English

General Studies

- Healthy eating*

- Healthy and unhealthy food

- Simple present tense
- "there is/are"
- Vocabulary about food and drinks
- Working out the meaning of unfamiliar words using pictorial cues

Curriculum mapping

"Healthy Eating" (P2 module)

- Food posters
- An article on Chinese New Year food

Selecting/ designing learning materials

Identifying & solving everyday problems

- Helping students who put on weight or got sick after the holiday

*Healthy eating was also reinforced in Chinese, Putonghua and Library lessons.

"Healthy eating"
(P2 module)

Picture of a nurse

Many children got sick and put on weight after the holiday. Please help them!

POE

Identifying strategies

Role: Little nurses

Oil level test

In the oil level test, students predicted if fried turnip cake or steamed turnip cake was healthier. They put a piece of kitchen towel on them and observed what would happen. Based on the findings, they explained the results and drew a conclusion.
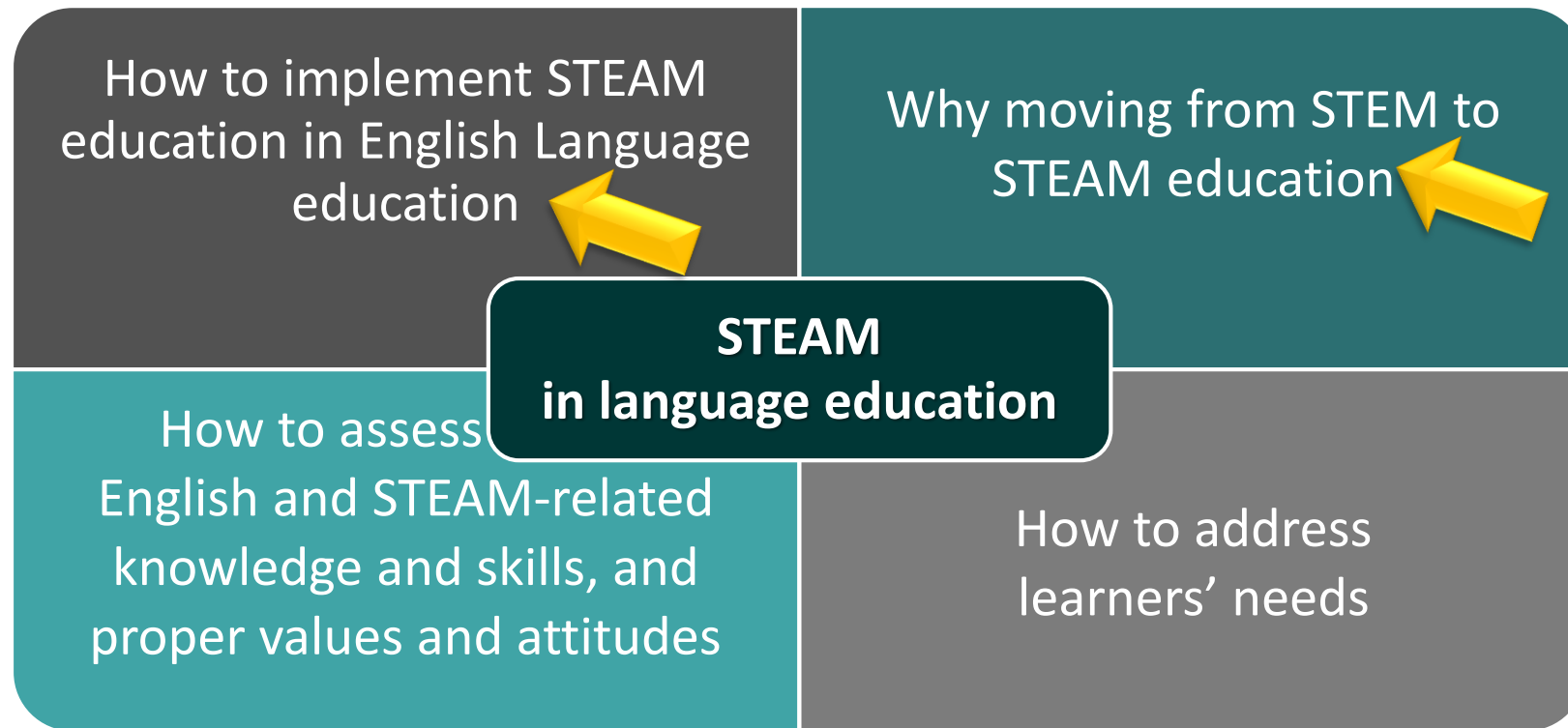
Reinforcing the importance of healthy eating
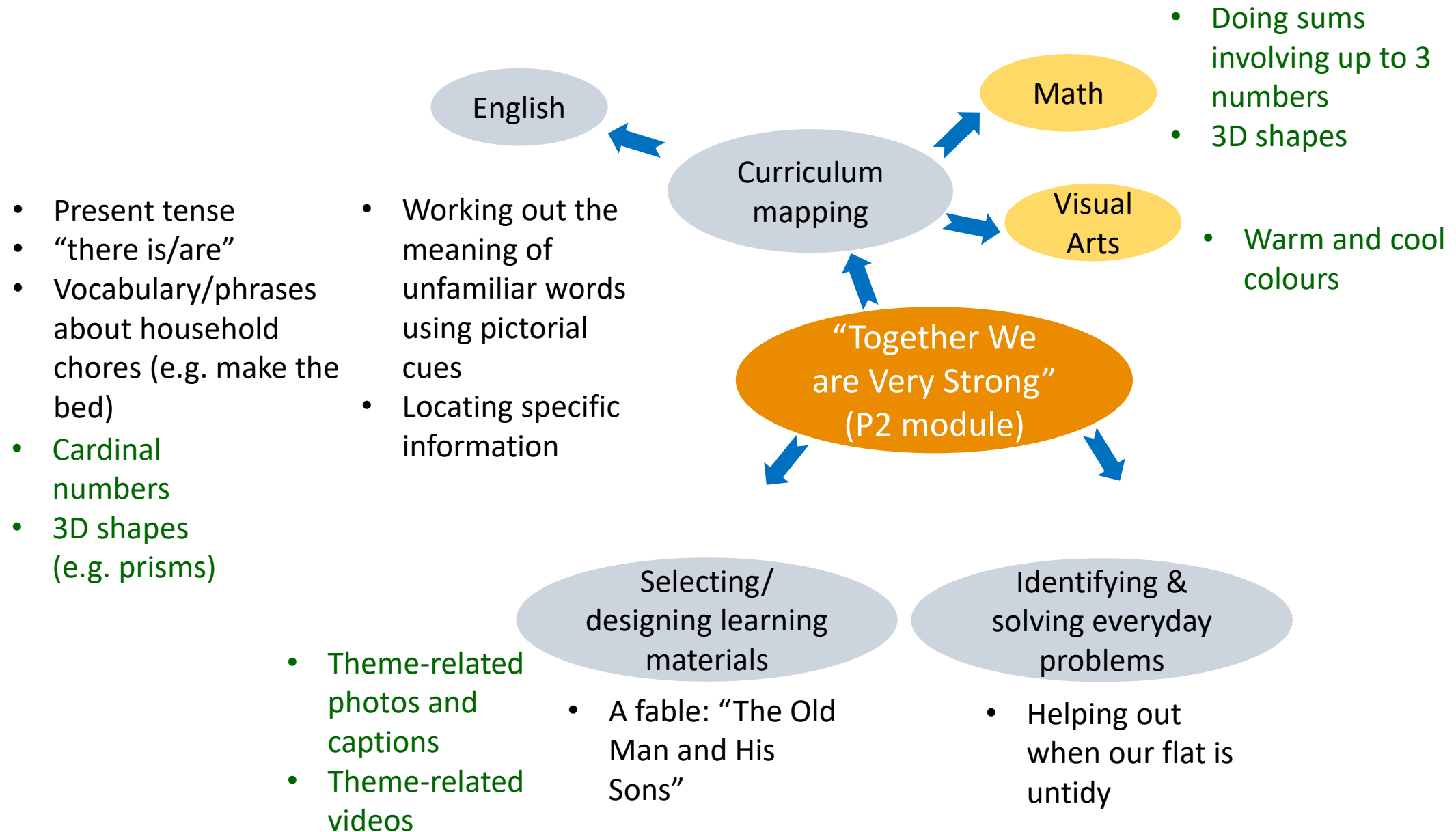Making the right choice with the help of the test

- Simple present tense
- "there is/are"
- Vocabulary about food and drinks

Write a healthy food poster

Module on "Together We are Very Strong" (P2)

Design Thinking ← Making a prototype

How to implement STEAM education in English Language education

Why moving from STEM to STEAM education

STEAM in language education

How to assess English and STEAM-related knowledge and skills, and proper values and attitudes

How to address learners' needs

English

- Present tense
- "there is/are"
- Vocabulary/phrases about household chores (e.g. make the bed)
- Cardinal numbers
- 3D shapes (e.g. prisms)

- Working out the meaning of unfamiliar words using pictorial cues
- Locating specific information

Curriculum mapping

Math

- Doing sums involving up to 3 numbers
- 3D shapes

Visual Arts

- Warm and cool colours

"Together We are Very Strong" (P2 module)

Selecting/designing learning materials

- Theme-related photos and captions
- Theme-related videos

- A fable: "The Old Man and His Sons"

Identifying & solving everyday problems

- Helping out when our flat is untidy

Theme-related learning materials
- A fable – "The Old Man and His Sons"

Science concept made easy with reading and viewing materials

Empathy   Unity

The fable "The Old Man and His Sons" was used to bring out the moral "together we are very strong", fostering empathy and unity among students. It also helped explain the science concept behind breaking a stick and a bundle of sticks. Students developed their reading skills (e.g. working out the meaning of unfamiliar words using pictorial cues) in the learning process.

STEAM

Theme-related learning materials
- Photos and captions
- Videos and everyday examples

English   STEAM

Everyday examples, including photos of paper tube chairs, honeycomb chairs and wrapping paper, and egg walking videos, improved students' understanding of the science behind "together we are very strong". In the process, students also reinforced their reading skills (e.g. working out the meaning of unfamiliar words using pictorial cues).

STEAM

Students designed paper stands with paper tubes or prisms. They tested if their stands could withstand the weight of heavy objects and explored ways to improve them. In the process, they applied their Mathematics knowledge of adding up to three numbers, prisms, and cylinders. They also made their stand pretty by choosing a warm or cool colour.

A show-and-tell script about the paper stand

- Present tense
- 'there is/are'

Mathematics lessons: Learning about adding up to 3 numbers, prisms and cylinders

Visual Arts lessons: Learning about warm and cool colours

How to implement STEAM education in English Language education

Why moving from STEM to STEAM education

STEAM
in language education

How to assess English and STEAM-related knowledge and skills, and proper values and attitudes

How to address learners' needs

How to assess English and STEAM-related knowledge and skills and proper values and attitudes

STEAM-related knowledge and skills
❖ Testing and improving prototypes
❖ Analysing test results

Proper values and attitudes
❖ Assessment of proper values and attitudes

English knowledge & skills
❖ Language, vocabulary and language skills

Assessment of proper values and attitudes

Pre- and post-module self-assessment

Students completed a pre-/post-module self-reflection form to assess their proper values and attitudes (e.g. caring for others).

Post-module "pledge, act and reflect" tasks

Students completed a "pledge, act and reflect task" (e.g. setting goals to do household chores and had self-reflection.)

Creative problem solving in story writing using STEAM knowledge

An excerpt of a student's picture story about Big Ted

Problem

It started to rain heavily… "I don't want to get wet!"

Solution

I checked what I had in my school bag that I could make an umbrella. I used a plastic folder and plastic wrap to make an umbrella…

Module 2: "Big Ted Bear Day" (P3)

How to implement STEAM education in English Language education

Why moving from STEM to STEAM education

STEAM in language education

How to assess STEAM-related and English knowledge and skills, and proper values and attitudes

How to address learners' needs

How to address learners' needs

Is "STEAM in English" suitable for very young learners and students of lower proficiency level?

- Improving engagement
  - Using characters for contextualisation
  - Assigned a well-defined role and a motivating task

Taking on the role of a little designer/ nurse/scientist...

- Using student-friendly terms

Used	Instead of
Together we are very strong	Together we are stronger Distribution of weight
Nurse	Nutritionist
Kind	Benevolence
Predict	Hypothesise
...	...

- Using a supplementary booklet to allow all students to select learning materials of their choice

Outcomes

Curriculum
The school's English Language curriculum has been renewed in line with the updated curriculum reform.

Teachers
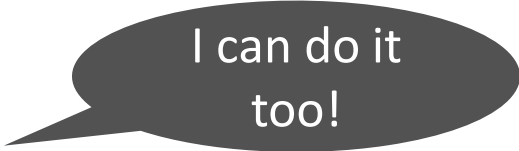Curriculum leaders have been nurtured to implement change.

Students
Curiosity
Thinking skills
Motivation
Priority values
Improved English knowledge and skills

Way forward

- Making more cross-curricular links (e.g. collaborating with the Music Department)
- Refining the P1 STEAM-infused modules with POE/Design Thinking

Takeaways

A seed today is a harvest tomorrow.

Together we are very strong.

I can do it too!

Cross-curricular collaboration →
- English knowledge & skills
- STEAM-related knowledge
- Proper values and attitudes

Tiny actions can create ripples of **transformation.**

Thank you!