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# Guidebook for Unplugged Computational Thinking

**Online Workshops for Lesson Study 2.0:  
Unplugged Computational Thinking in APEC Economies**

Commentaries by Raimundo Olfos & Soledad Estrella

**Pontificia Universidad Católica de Valparaíso, CHILE**

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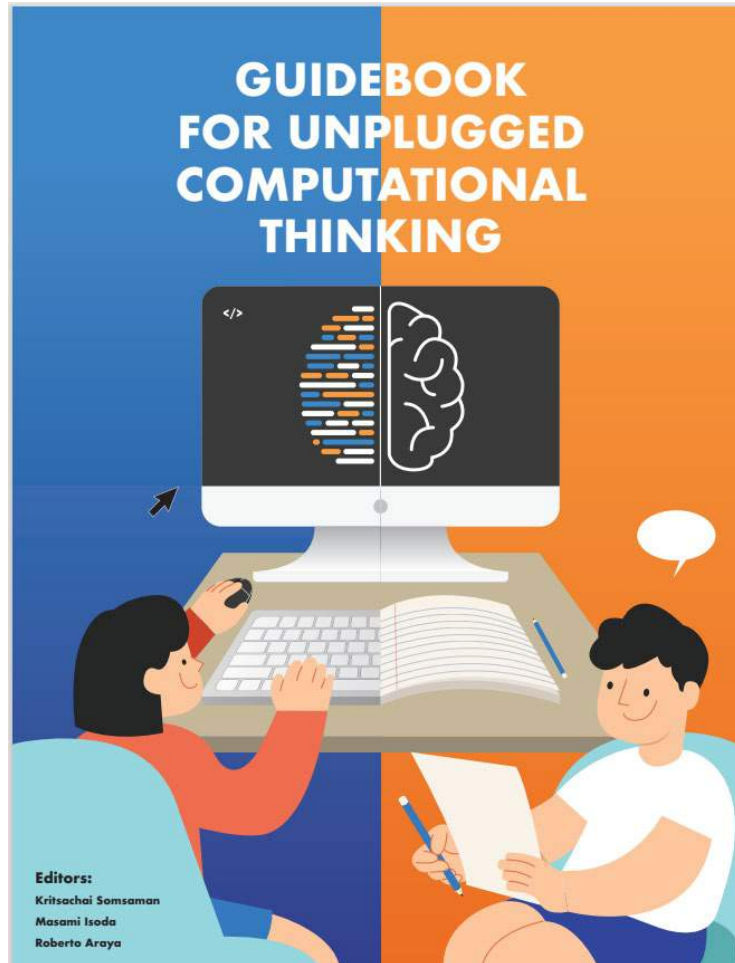
# UNPLUGGED ACTIVITIES

- Unplugged activities are activities to learn how to think computationally without using a computer
- There is much evidence that appropriate use of unplugged pedagogical techniques can be very effective and motivational for the learner

(Waite, J. (2017) Pedagogy in teaching Computer Science in school: A Literature Review)

# The guidebook analyses three types of activities.

First, "coloring activities" to develop computational thinking. Then "mathematics and STEM activities" to promote respectively mathematical and STEM thinking.



The guidebook was edited by

- **Kritsachai Somsaman**, SEAMEO STEM-ED, Thailand
- **Masami Isoda**, CRICED, University of Tsukuba, Japan
- **Roberto Araya**, CIAE, University of Chile, Chile

The project aim is to provide **primary teachers materials** for contributing to Develop **Computational Thinking on Artificial Intelligence and Big Data Era for Digital Society**

In this intervention we will comment chapter 1 "coloring activities".

"**Coloring activities**" encourage the development of computational thinking through **natural language**, which is foundational for using **generative AI and reasoning** for programming

# Two-steps activities:

## Task A

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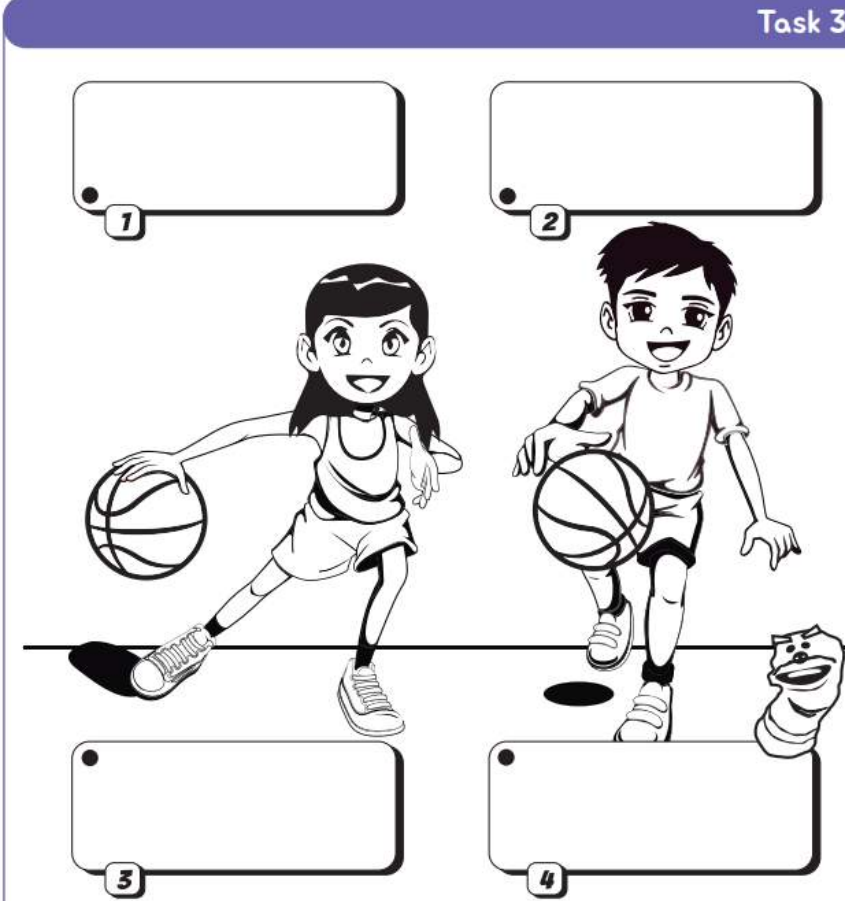
## Task B

**1.3 Playing Basketball** Task 3A



Source: Colouring Book [Book 1, Page 3A]

**Task 3B**



Source: Colouring Book [Book 1, Page 3B]

**Task B** is an open task which provides the opportunity to reflect on the whole previous activities. It is a first approach to the construction of prompts.



# Tasks complexity and metacognition

**1.1 Piano Playing** Task 1A

1 Piano red

2 Hair brown

3 Top cat gray

4 Dress pink

Source: Colouring Book [Book 1, Page 1A]

1. Let's show your painted picture to friends. Is it the same as others?
2. Let's explain your order of painting commands to the others.

**One piano, two cats**

Explain to others

**1.2 Skateboarding** Task 2A

1 Shirts blue

2 Skateboard girl yellow

3 Skateboard boy brown

4 Sneakers red

Source: Colouring Book [Book 1, Page 2A]

1. Girl and boy wear shirts and use sneakers: How do you follow commands?
2. Let's show your painted picture to friends. Is it the same as others?

**Shirts blue**  
**Two skateboard (girl/boy)**

Show and compare

**1.3 Playing Basketball** Task 3A

1 Ball boy orange

2 Shirt boy light blue

3 Ball girl yellow

4 Short boy blue

Source: Colouring Book [Book 1, Page 3A]

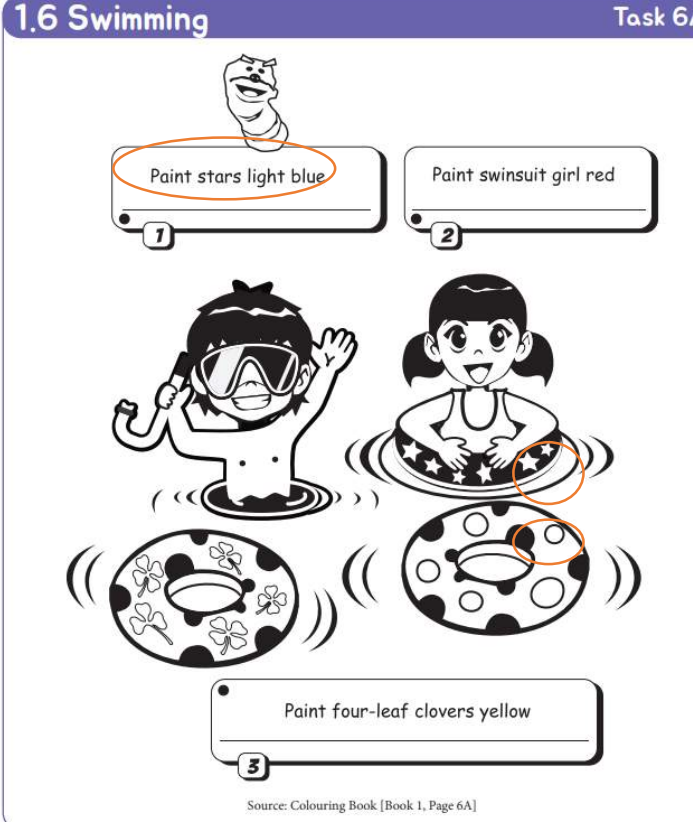
1. How do you interpret every command in each box?
2. Let's show your picture to friends and others explain your picture how you interpret it.

**Ball boy, Shirt boy, Short boy**  
**Ball girl yellow**

Show, explain to others, and interpret

# How to provide effective “Prompts”

### 1.6 Swimming Task 6A



Paint stars light blue

Paint swimsuit girl red

Paint four-leaf clovers yellow

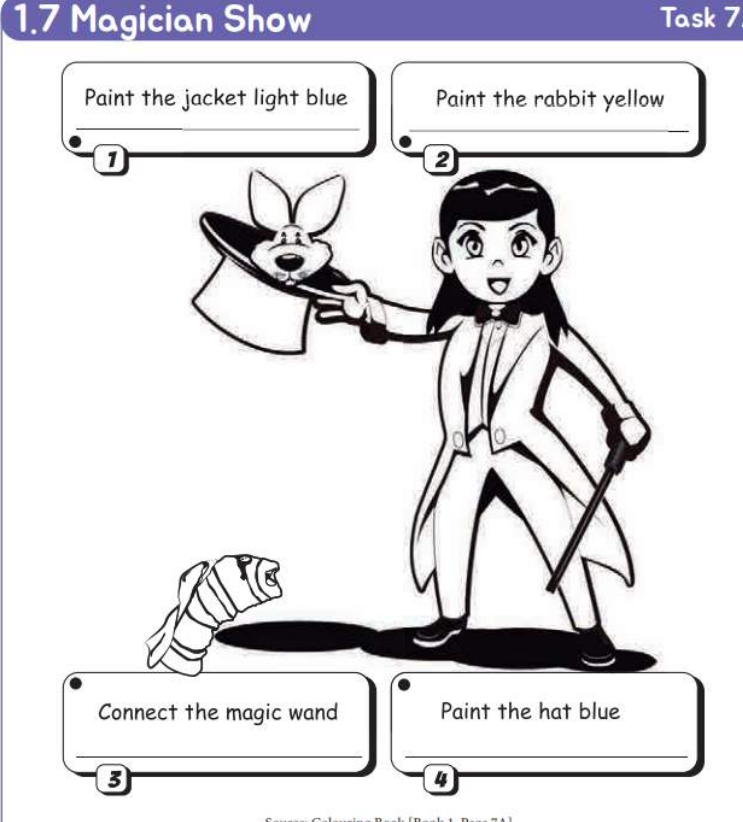
Source: Colouring Book [Book 1, Page 6A]

Let's discuss the painted result and find the different result depending on students. And discuss why the different painted result was produced?

**Paint stars (real stars are...)**

Various representations

### 1.7 Magician Show Task 7A



Paint the jacket light blue

Paint the rabbit yellow

Connect the magic wand

Paint the hat blue

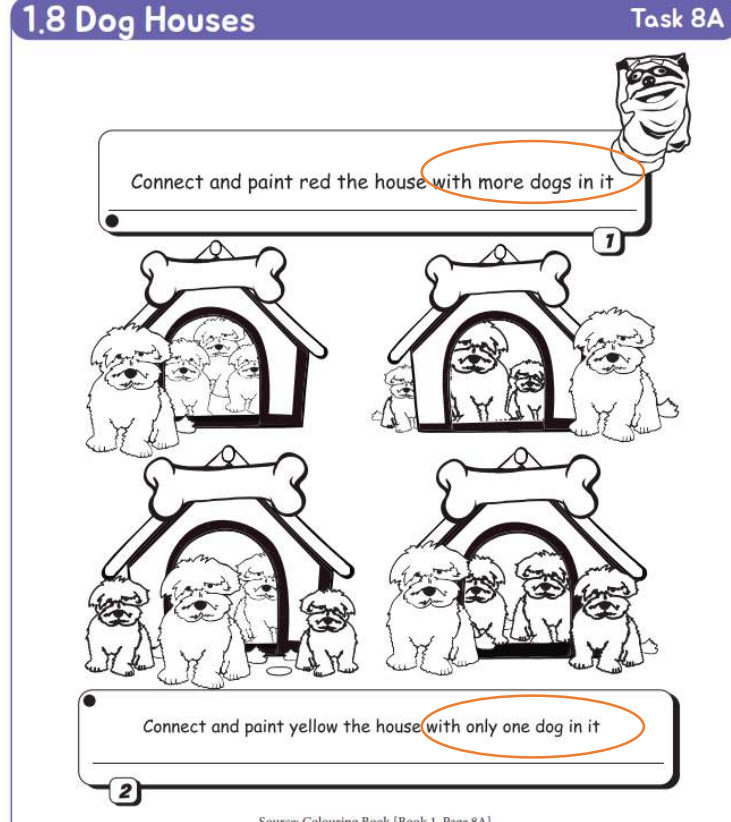
Source: Colouring Book [Book 1, Page 7A]

1. Let's develop the story of magic in the ordered commands.
2. In the story, what is the function of 'the magic wand'? Is it a reasonable flow of story?

**Develop the story of magic**

setting the steps of the sequence

### 1.8 Dog Houses Task 8A



Connect and paint red the house with more dogs in it

Connect and paint yellow the house with only one dog in it

Source: Colouring Book [Book 1, Page 8A]

1. Let's paint and explain it to the others.
2. Let's explain every doghouse by using the word 'more' or 'only.'

**More dogs, Only one dog**

Setting condition and contextual meanings

# Closing commentaries for Coloring Activities Guide

- Coloring activities are **amused for children**
- **Reflection** can be added to illuminate **coloring activities**

As teachers **imagine the objective of the task**,  
they can lead their students to **achieve the goal**.

- These **coloring activities** were produced to develop **Computational Thinking on Artificial Intelligence and Big Data Era for Digital Society**
- The **Guidebook** provide **insight for teaching**

**Well Done!**

