Carpentries Instructor Training

Mateusz Kuzak
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Welcome & Expectations

(30 minutes)

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Introductions

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Collaborative documents

- Open (and bookmark) the shared documents

  - https://tinyurl.com/2022-06-21-ttt-netherlands-d1

  - https://tinyurl.com/2022-06-21-ttt-netherlands-d2

- Make sure you've taken the pre-workshop survey

Code of Conduct

The Carpentries Code of Conduct:
https://docs.carpentries.org/topic_folders/policies/code-of-conduct.html
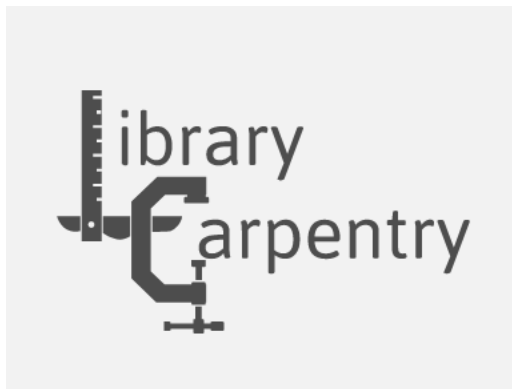
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Schedule

Day 1, part 1	Research-based teaching principles
Day 1, part 2	Creating a respectful, inclusive learning environment
Day 2, part 1	Practicing teaching and improving skills
Day 2, part 2	How to teach a workshop

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An overview of the Carpentries

- Goal: to convey best practices that will enable researchers to be more productive and do better research.

Exercise 1 – Familiarity with the Carpentries

Go to the HackMD for Exercise 1

Building Skill with Practice

(60 minutes)

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Dreyfus Model of Skill Acquisition

Novice	Competent Practitioner	Expert
" I'm not sure what questions to ask "	" I'm pretty confident, but I still look stuff up a lot! "	" I've been doing this on a daily basis for years! "

Experience level →

Mental Models

Exercise 2: Analogies (Break out Rooms)

Breakout rooms, 10 minutes

Consider an analogy that you might use to explain your work/hobby
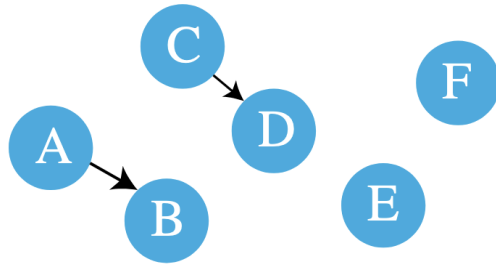
Share it with your group

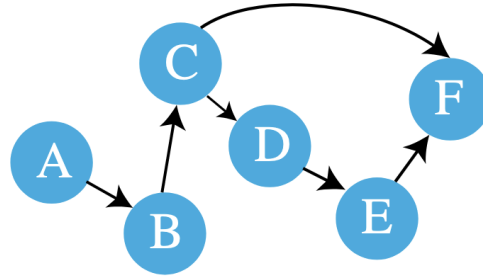Discuss how it is useful, how it is wrong
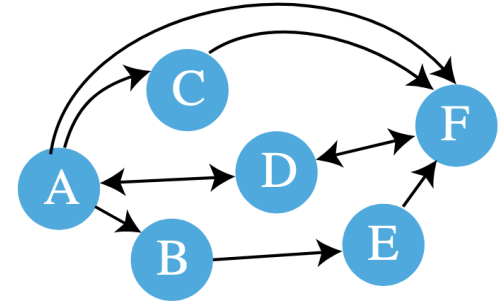
Mental models and expertise

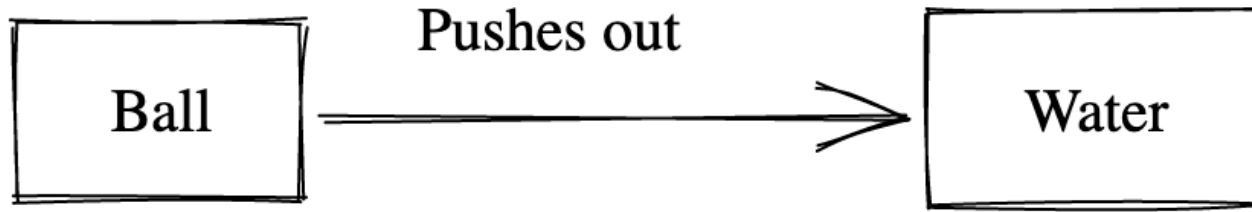|		
Novice	Competent Practitioner	Expert
" I'm not sure what questions to ask "	" I'm pretty confident, but I still look stuff up a lot! "	" I've been doing this on a daily basis for years! "

Experience level →

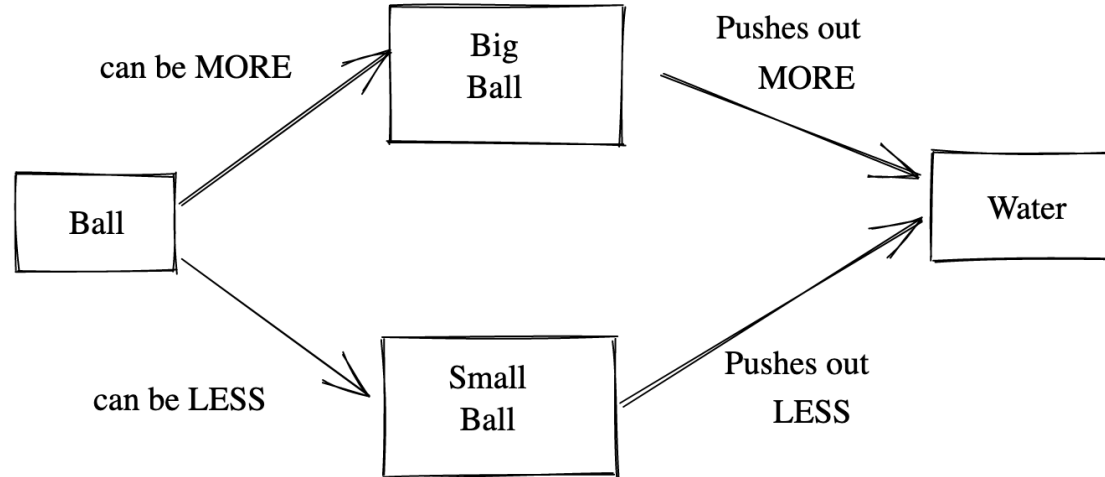# Mental models and expertise

A concept map of a simple mental model

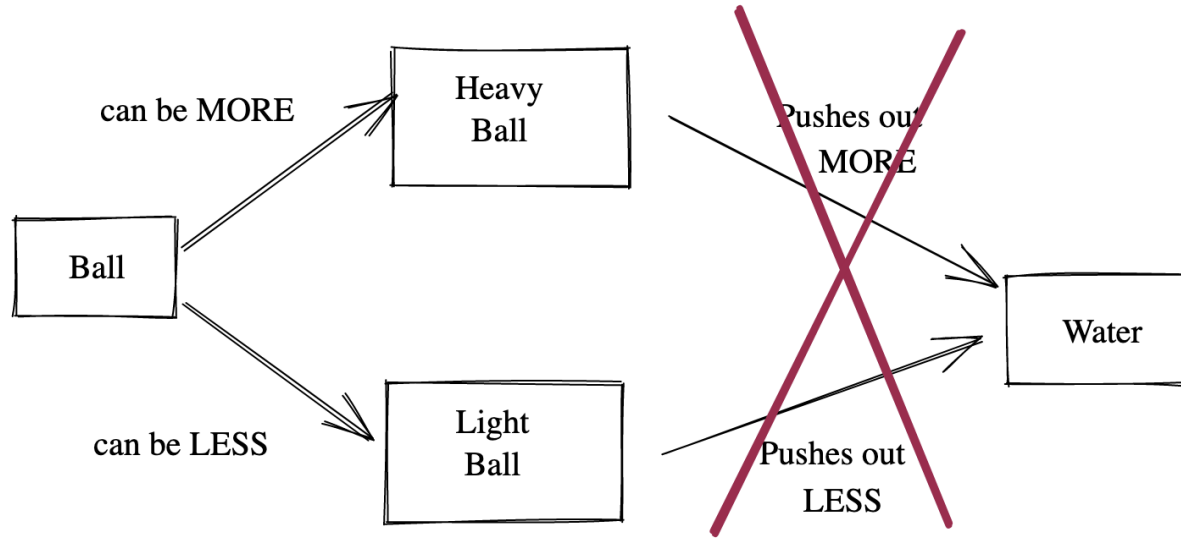A kid has a ball and a full bucket of water

A concept map of a simple mental model
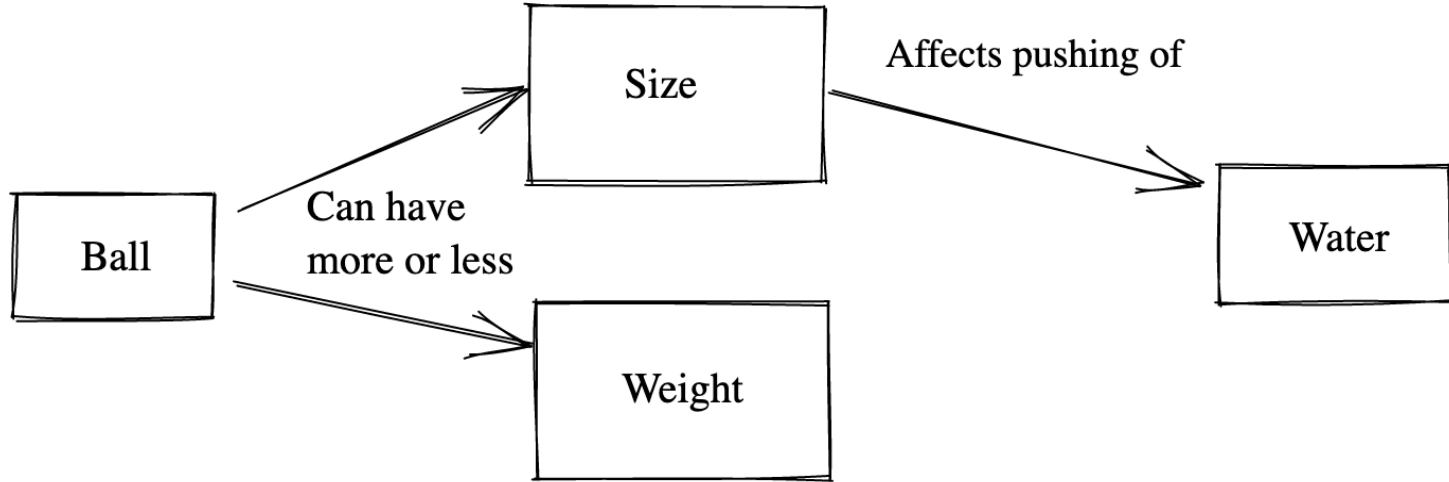
Now, the kid has 3 different-sized balls:

A concept map of a simple mental model

What if they also have different weights?

Correcting mental models

Unlearning takes time!

Exercise 3 - Concept Mapping (On own)

1. Draw a concept map of the topic you discussed just now (the analogy in Activity 4)

2. Identify 1 - 2 core concepts, and their relationships

3. Identify 1 (or more) types of misconception that can occur and classify them as factual error, broken model, or fundamental belief

Formative assessment

Any instructional tool that generates feedback that is used in a formative way

How can formative assessment be useful?

- It generates immediate feedback for both learners and instructors
- The feedback helps us assess the mental model that is forming in our learners
- We can identify misconceptions
- We can go on to correcting those misconceptions

- Formative assessment is different from **summative** assessment

How should you use formative assessment?

- Use it regularly (ideally an exercise every 10 minutes)
- Make sure all learners are assessed
- Respond promptly to the results of the assessment

Exercise 4 - Formative Assessment

Based on your previous educational experience (or even this training so far!) what types of formative assessments do you know about?

Write them in the HackMD.

Example: plausible distractors

$$27$$
$$15 \; +$$
$$\overline{}$$
$$?$$

A) 42

B) 32

C) 312

D) 33

Example: plausible distractor

What does each wrong answer tell you about the learner's misconception about long addition?

$$27$$
$$15 +$$
$$\overline{}$$
?

A) 42

B) 32

C) 312

D) 33

Exercise 5 - Formative Assessment MCQ (HackMD)

Choose one wrong answer and write in the HackMD what the misconception is associated with that wrong answer

Exercise 6 - Handling Outcomes

Formative assessments allow us as instructors to adapt our instruction to our audience. What should we do as instructors if the class chooses:

1. mostly one of the wrong answers?
2. mostly the right answer?
3. an even spread among options?

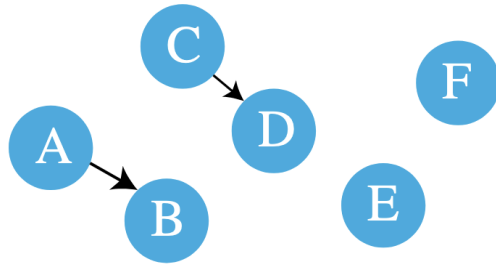For one of the above, enter your answer in the HackMD.
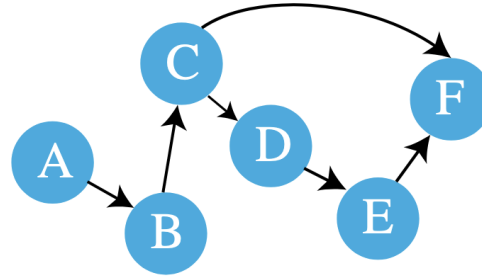
Expertise and Instruction
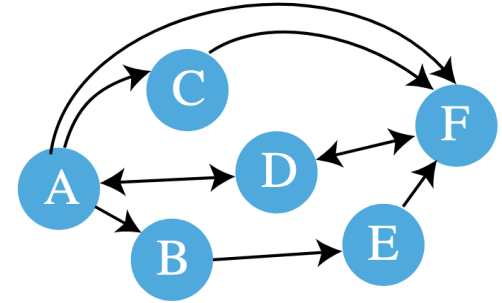(45 minutes)

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Expertise and instruction

Exercise 7 – expertise

What is something that you are an expert in? How does your experience when you are acting as an expert differ from when you are not an expert?

Exercise 8 – expertise

- Is there anything you are learning how to do right now? Can you identify something that you still need to think about, but your teacher can do without thinking about it?
- Think about the area of expertise you identified for yourself earlier. What could a potential awareness gap be?

Exercise 9 – inclusive language

- What other words or phrases, besides "just", can have the same effect of dismissing the experience of finding a subject difficult or unclear?
- Propose an alternate phrasing for one of the suggestions above.
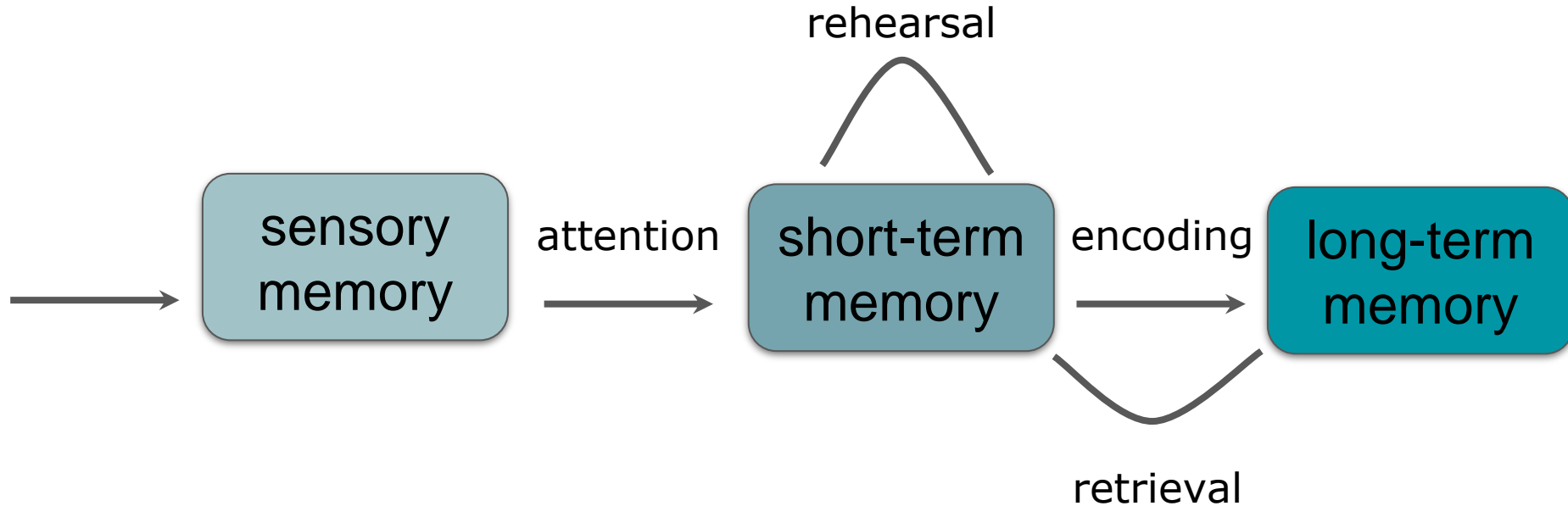
Write your answer in the HackMD

Memory and cognitive load

(45 minutes)

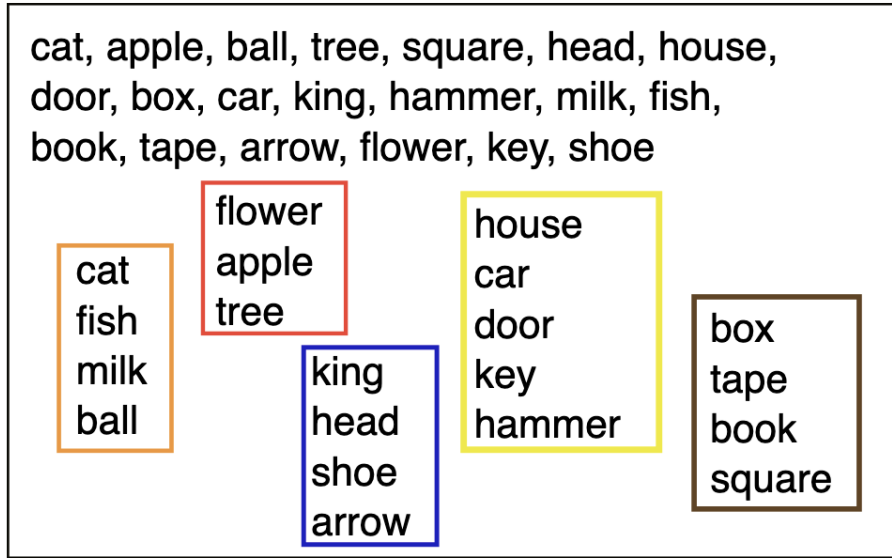**THE CARPENTRIES**

Memory and cognitive load

Exercise 10 – test your working memory

https://miku.github.io/activememory/

Write your score in the HackMD!

Strategies for memory management

cat, apple, ball, tree, square, head, house,
door, box, car, king, hammer, milk, fish,
book, tape, arrow, flower, key, shoe

flower
apple
tree

cat
fish
milk
ball

king
head
shoe
arrow

house
car
door
key
hammer

box
tape
book
square

Exercise 10 (again) – test your working memory

- Repeat the memory exercise you did earlier, but this time, try to form short stories or phrases, or a visual image, from the words you see.
- Write the number of words you remembered in the HackMD. How does this compare with your first attempt?

Building skill with feedback

(20 minutes)

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Building skills with feedback

Surveys

Code of Conduct

Everyone who participates in Carpentries activities is required to conform to the Code of Conduct. This document also outlines how to report an incident if needed.

Report a Code of Conduct Incident

Collaborative Notes

We will use this collaborative document for chatting, taking notes, and sharing URLs and bits of code.

Surveys

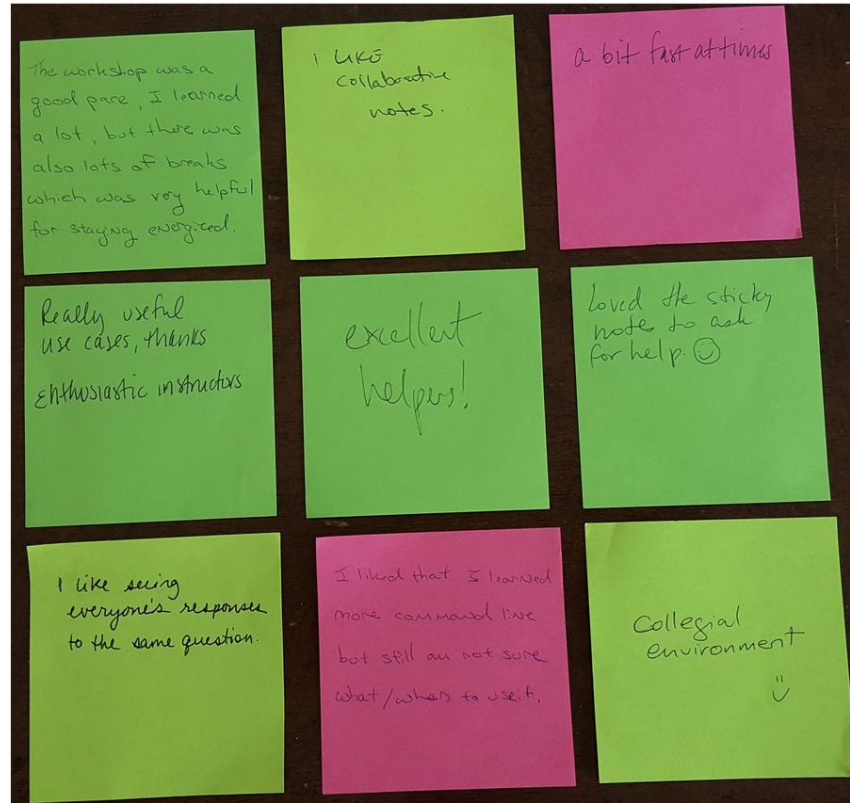Please be sure to complete these surveys before and after the workshop.

Pre-workshop Survey

Post-workshop Survey

**Custom links
for your workshop**

Minute cards

One up, one down

Exercise 11 – give us feedback

Write one thing you learned this morning that you found useful on your blue sticky note, and one question you have about the material on the yellow. Do *not* put your name on the notes: this is meant to be anonymous feedback. Add your notes to the pile by the door as you leave for lunch.

Lunch break

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