

Carpentries Instructor Training

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**THE
CARPENTRIES**

Welcome & Expectations

(30 minutes)



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Introductions

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Collaborative documents

- Open (and bookmark) the shared documents
 - tinyurl.com/2022-instructor-training-day1
 - tinyurl.com/2022-instructor-training-day2
- 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

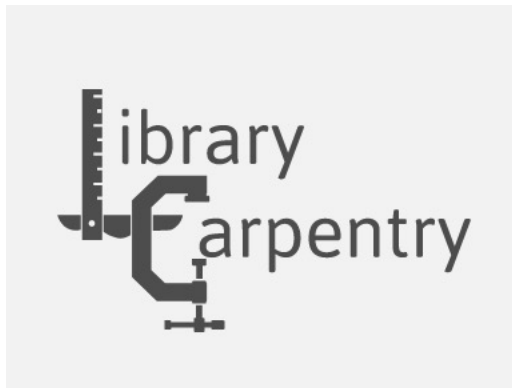
Day 1, part 1	Research-based teaching principles
Day 1, part 2	Creating a respectful, inclusive learning environment
Day 2, part 1	Practicing teaching and improving skills
Day 2, part 2	How to teach a workshop



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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



Mental Models



Exercise 2: Analogies (Breakout Rooms)

Breakout rooms, 10 minutes

Consider an analogy that you might use to explain your work/hobby

Share it with your group

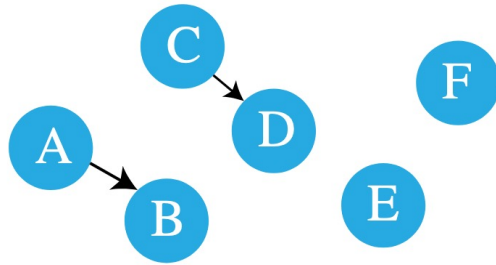
Discuss how it is useful, how it is wrong



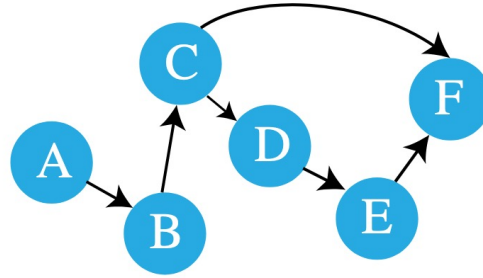
Mental models and expertise



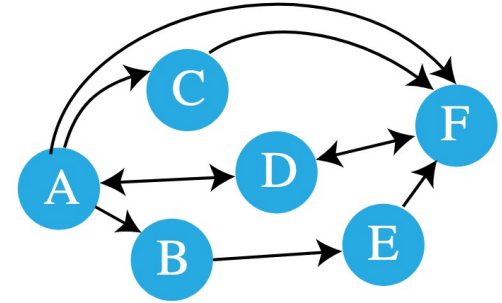
Mental models and expertise



Novice



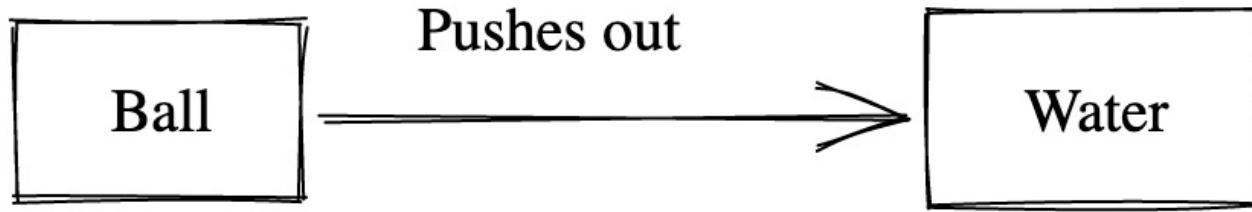
Competent Practitioner



Expert

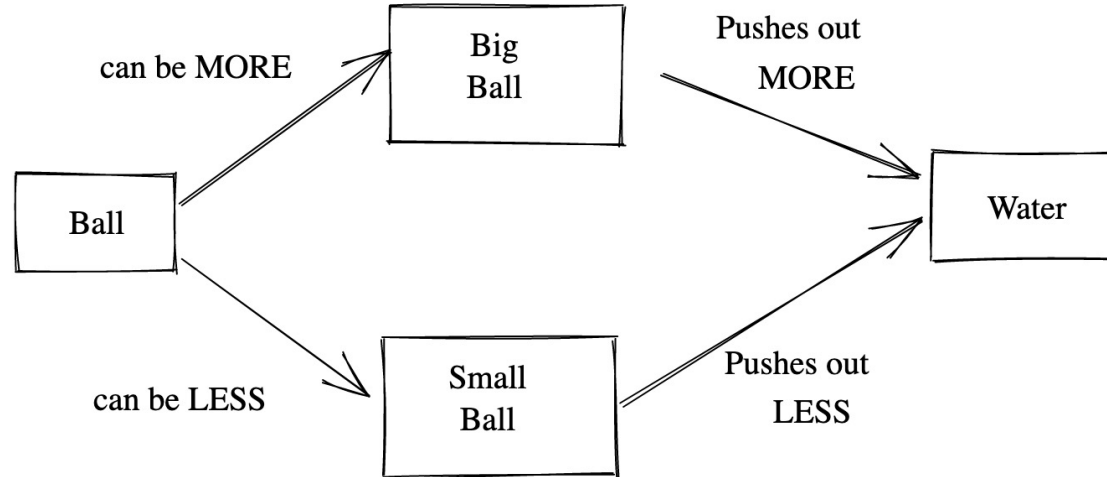
A concept map of a simple mental model

A kid has a ball and a full bucket of water



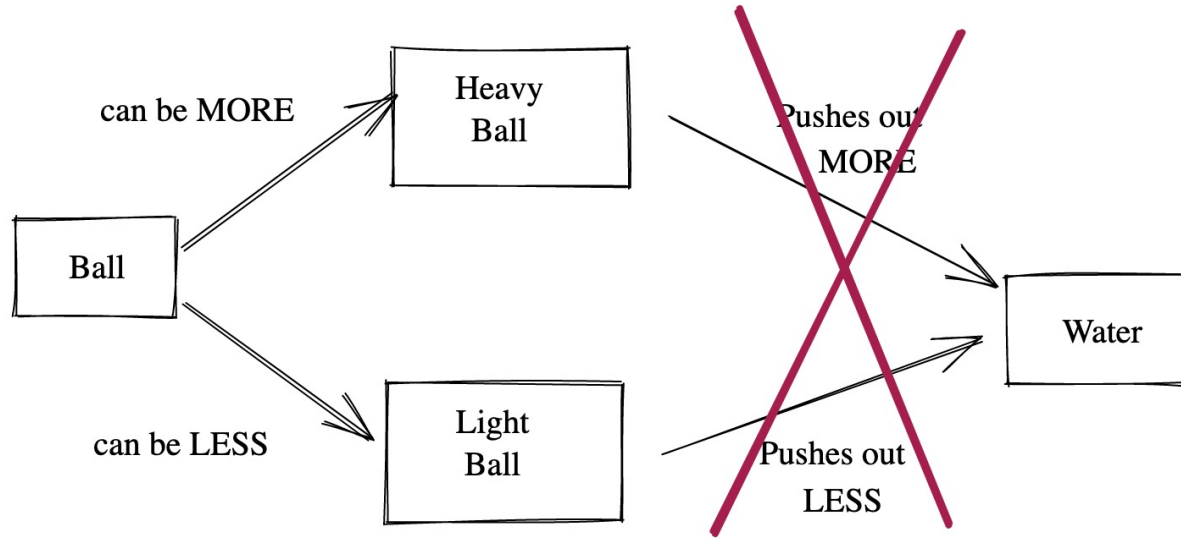
A concept map of a simple mental model

Now, the kid has 3 different-sized balls:



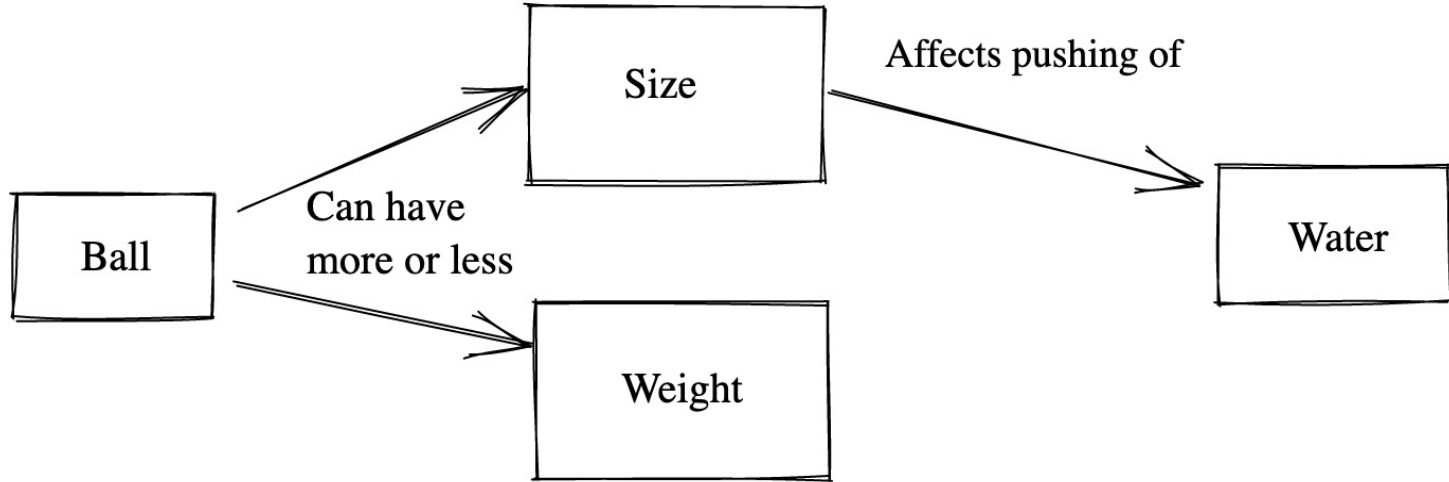
A concept map of a simple mental model

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

$$\begin{array}{r} 27 \\ 15 + \\ \hline ? \end{array}$$

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?

$$\begin{array}{r} 27 \\ 15 + \\ \hline ? \end{array}$$

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)



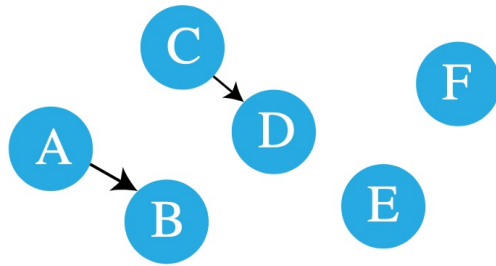
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Exercise 7 – expertise

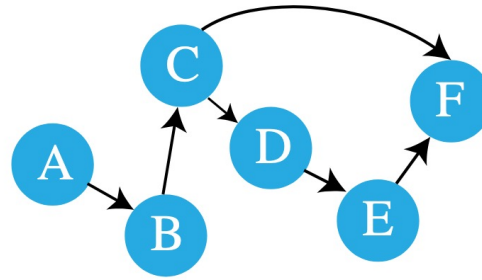
What is something that you are an expert in? How does your experience when you are acting as an expert differ from when you are not an expert?



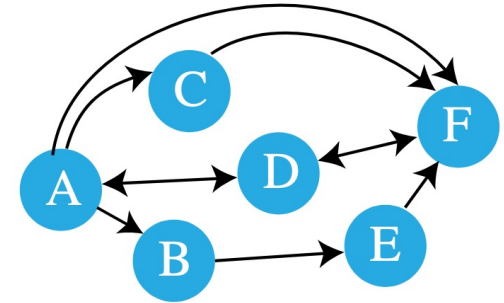
Expertise and instruction



Novice



Competent Practitioner



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



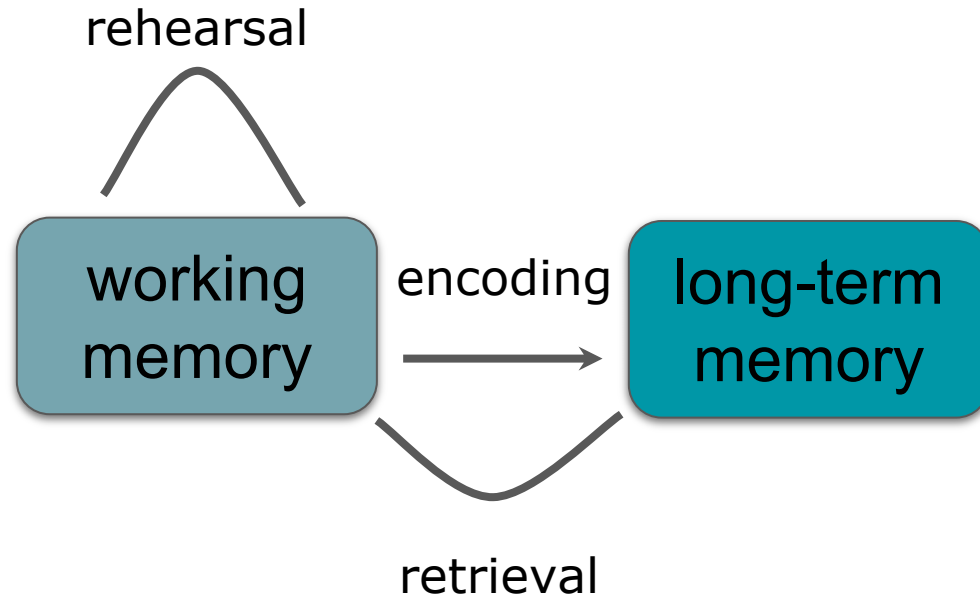
Memory and cognitive load

(45 minutes)

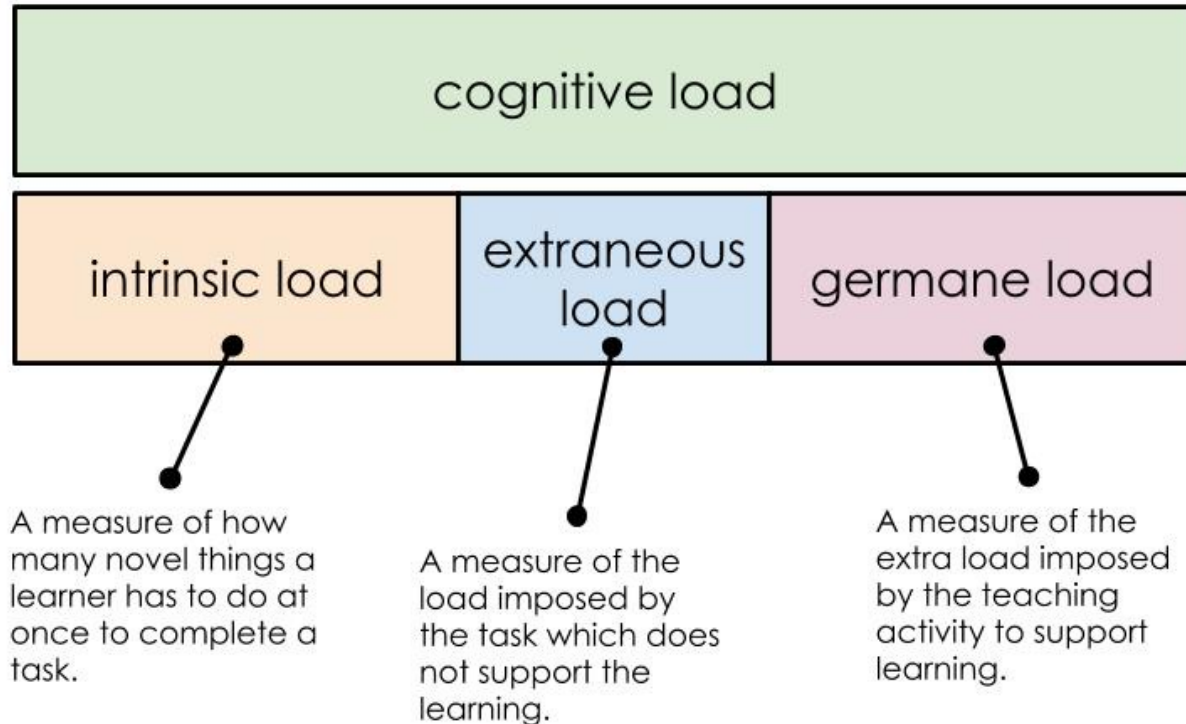


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Memory and cognitive load



Cognitive load



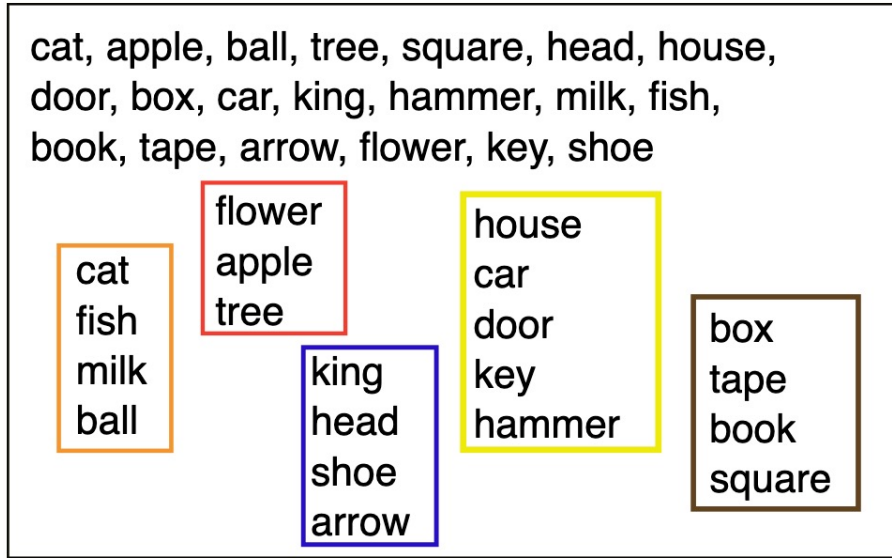
Exercise 10 – test your working memory

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

Write your score in the HackMD!



Strategies for memory management



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.

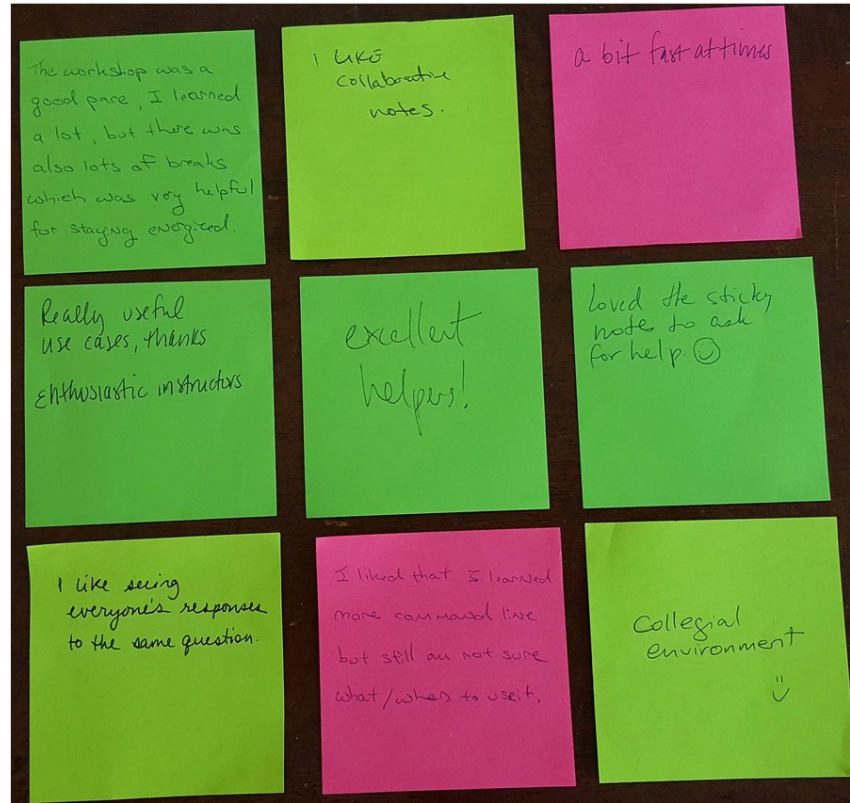
[Pre-workshop Survey](#)

[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 under “useful” in the HackMD, and one question you have about the material under ”questions”. Do *not* add your name: this is meant to be anonymous feedback. When you are done, enjoy your lunch!



Lunch break



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Feedback: it was a dense morning!

- Checkout requirements: <https://carpentries.github.io/instructor-training/checkout/index.html>
- Centrally and self-organised workshops: <https://carpentries.org/workshops/#workshop-core>
- Ways to connect with the carpentries community: <https://carpentries.org/connect/> and <https://carpentries.topicbox.com/groups>
- Carpentries handbook (contains everything you may need to know and more): <https://docs.carpentries.org/>

More practice live coding



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Live demo rubric (10 min)

Read the rubric that is given to Instructor Trainers as a suggested framework for evaluating the online teaching demonstration sessions that are part of Instructor checkout.

https://data-lessons.github.io/instructor-training/demos_rubric/.

What questions do you have?



More practice live coding (25 min + 10 min discussion)

Return to your groups and repeat the previous live coding exercise, re-teaching the same content as before (3 minutes!). This time, the presenter should incorporate changes based on feedback received, and everyone should try to 'level up' their feedback using the rubric for teaching demos (5 minutes).

When you are finished, add some thoughts on this process to the HackMD:
What did you change? Did it work better or worse with the change? How might you do it if you were to teach it again

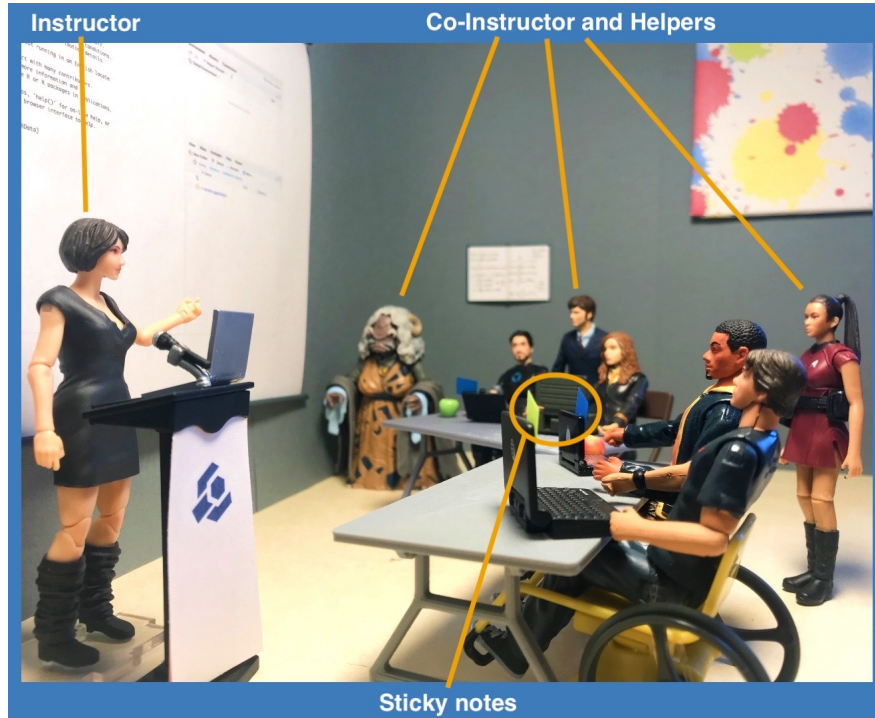


Working with your team



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Never teach alone



Also:

- Formative assessment
- Breaks with snacks
- Feedback (with sticky notes)

Learners at many levels

- Communicate level clearly, describe topics
- Beginner and advanced options for exercises
- Encourage learners to help others
- Do not let advanced learners take over the conversation
- Be vigilant for learners who are falling behind

Code of conduct violations

- Incidents must be reported for the CoC to work well
- When in doubt, report (not the responsibility of the reporter to determine if there has been a CoC violation or not)
- Discuss how to manage CoC violations in advance

Know your resources (10 minutes)

Take 5 minutes to read through the Code of Conduct Incident Response Guidelines:

https://docs.carpentries.org/topic_folders/policies/incident-response.html

Discuss what you have read in small groups. As questions arise, you may wish to refer to our complete Code of Conduct section in The Carpentries Handbook or to the Transparency Reports released by The Carpentries Code of Conduct Committee (links in HackMD)

What kinds of things could your instructional team agree upon in advance of your workshop?

What questions do you have about CoC enforcement? Write in the HackMD



Planning together

Teaching together – Nuts and Bolts (10 minutes)

With a partner, imagine that you are planning a workshop together. For this exercise, you may assume that your workshop has a separate, designated Host.

- How would you prepare to teach a workshop together?
- How would you coordinate with other members of your instructional team (e.g. Host, Helpers)?
- What kinds of things will you do to support each other during the workshop? What won't you do?
- Record some notes, and share your thoughts with the group.



Co-instruction suggestions

- Decide who teaches what and for how long
- Advance preparation together or asynchronously
- Practice together
- What information is needed to advertise and communicate: Audience, in person vs online, setup instructions and setup sessions
- Where will you communicate together?
- Who is the contact person for participants?
- Discuss how to manage CoC violations in advance
- Signal things like going too fast / who needs help / it's time for a break - agree on the signal if people do not like to be interrupted
- Active classroom assistance Carpentries style
- Who sets up the repository and HackMD / CodiMD?

Launches and landings



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What is an introduction?

Discuss in pairs:

What do you hope to accomplish in a workshop introduction?

What information do you need to include in an introduction to accomplish these goals?



After the introduction, learners should

- be able to predict the type of instruction
- know what will be taught
- understand what will be required of them
- believe that they can learn from the workshop

After the introduction, the instructional team should

- know who is participating in the workshop and what their expectations are
- have an initial impression of how learners respond to participation prompts and what will be needed to encourage them to engage

Setting the stage

- Attire
- Physical environment
- Your use of the few minutes before class
- Introduction of yourself
- Your doubts
- The classroom community and icebreakers

Teaching your trajectory: what you can communicate

- Describe the prerequisites
- Schedule and logistics
- Workshop structure
- Your expectations (Code of Conduct, asking for help / feedback)
- Baseline data on learners
- Advice for success
- Whet appetite for workshop content

Practice your introduction (15 minutes)

Write out some notes, covering a few of the topics described above

1. Introduce yourself effectively
2. Clarify learning objectives and expectations
3. Set the tone for the workshop
4. Return to your groups of 2 or 3 and each give about 90 seconds of your introduction. (5-6 min)

After each introduction, briefly share feedback, reserving extensive discussion for after all have had a turn to present.



The art of a smooth landing

Brainstorm: making the last moments count (5 minutes)

What could you do at the end of a workshop? What would be the value?



Putting it together



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Putting it together (5 minutes)

Based on the content we've discussed throughout this workshop, add at least one item to each category below in the HackMD:

- Concepts/Theories
- Tools/Practices

This exercise can be done individually and should take about 5 minutes.



Some topics we discussed!

- novice, competent practitioner, expert
- mental model
- formative assessment
- expert awareness gap
- short-term and long-term memory
- cognitive load
- motivation
- demotivation
- error-framing
- life-long learning
- feedback
- lesson study
- Code of Conduct
- concept maps
- Multiple Choice Question (MCQ)
- peer instruction
- going slowly
- “just”
- accessibility
- sticky notes
- one-up, one-down
- pre- and post-workshop surveys
- participatory live coding
- introductions

Wrapping up



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Wrapping up

How can we improve this workshop?

- One up, one down
- Minute cards
- Post-workshop survey

Thank you!



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