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THIS ETHERPAD: https://pad.carpentries.org/ttt-ucd-library
Today's schedule and lessons: https://carpentries.github.io/instructor-training/ (we'll shift everything from 9 -> 10 still ending at 5pm)
Workshop website: https://jt14den.github.io/2019-06-24-ttt-ucd_library/

Sign in: Name, Institution, Email, Twitter (optional)
Please sign in so we can record your attendance.

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Please fill out the pre-training survey at
https://www.surveymonkey.com/r/instructor_training_pre_survey?workshop_id=instructor-training

I. Welcome

Today's schedule and lessons: https://carpentries.github.io/instructor-training/
Code of Conduct:
https://docs.carpentries.org/topic_folders/policies/code-of-conduct.html

Introductions

Information for Today's Learners

1. Add your name to the Etherpad above
2. Introduce yourselves! In your introduction, (a) explain your work in 3 words and (b) say something you are proud of (not necessarily related to research or teaching).

A Brief Overview of the Carpentries
https://carpentries.org/workshops/

Instructor Training Workshop Overview

- How learning works
- Building teaching skill
- Creating a positive learning environment
- Carpentry history and culture

Assessing Trainee Motivation and Prior Knowledge

Background (3 min)
Have you ever participated in a Software, Data or Library Carpentry Workshop?

- Yes, I have taken a workshop. xxXxxxx
- Yes, I have been a workshop helper. XX
- Yes, I organized a workshop.
- No, but I am familiar with what is taught at a workshop. xx xx xxxxx
- No, and I am not familiar with what is taught at a workshop.XXx

Which of these most accurately describes your teaching experience?

- I have been a graduate or undergraduate teaching assistant for a university/college course. x
- I have not had any teaching experience in the past. XX
- I have taught a seminar, workshop, or other short or informal course. xXxxxxxxxXxxxxxxXxx
- I have been the instructor-of-record for my own university/college course.x
- I have taught at the primary education level.

- I have taught informally through outreach programs, hackathons, laboratory demonstrations, and similar activities.

Key Points:

- The Carpentries are communities of practice. We strive to provide a welcoming environment for all learners and take our Code of Conduct seriously.
- This episode sets the stage for the entire workshop. The introductions and exercises help everyone begin to develop a relationship and trust.
- This workshop will cover general teaching pedagogy and how it applies specifically to the Carpentries.
- Learner motivation and prior knowledge vary widely, but can be assessed with a quick multiple choice question.

II. Building Skill with Practice

The Carpentries Pedagogical Model

Acquisition of Skill
https://carpentries.github.io/instructor-training/fig/skill-level.svg
https://carpentries.github.io/instructor-training/02-practice-learning/index.html

- Novice
- Competent practitioner
- Expert

Cognitive Development and Mental Models (5 min)
In the Etherpad, write your primary research domain or area of expertise and some aspects of the mental model you use to frame and understand your work. What concepts/facts are included? What types of relationships are included?

- FAIR data and the relationship between certified/FAIR repositories and datasets deposited in the repository not necessarily being FAIR - aspects of FAIR connect to oter complex frames e.g. licensing for re-use or ontologies for interoperability - some of them can be on repository level, some need to be addressed on dataset level
- Open Science: Research Objects aggregate models, code, data, result statements, hypotheses/research questions, workflows. They have a license that is as open as possible and as closed as necessary. FAIR data does not equal open data. d.
- Open Science publishing: open access, open peer review, publishing alternatives, preprint dissemination, preprint servers, overlay journals, publisher policies, repository archiving
- Different aspects /concpest of pen Science: OA, OER, Open Research Data, Policies, inter(national strategies), publishing modells structures of the pubication market, process of academic/scientific publishing, Facts: Creative Commons Licensing, Open Research Data in relation to FAIR, different metadata-schemata, Digital Literacy/capabilities
- My domain in in aircraft maintenance where the concept used is you may not stop an aircraft at 30000ft and change a wheel, therefore the job mustDbe done right
- Data licensing. Entities: licensor, licensee, licence, terms, resource. Relationships: licensor applies licence to a resource; licensee uses resource under licence. Licence is made up of terms. Facts: different types of available terms (e.g. copyleft, non-commercial, attribution), different pre-

prepared licences (e.g. CC BY, ODbL).
- Teaching students how to structure information. Going from abstract conceptual thinking about it to practical skills in data wrangling.
- Open science, rgpd, funding agencies = external reasons for complying with RDM. Visibility, skills, knowledge sharing, excellence = internal reasons for RDM. RDM is everywhere in the research life cycle (planning, collecting, managing data, analyzing, storing, publishing), but each step is related to different reason.
- Digital skills, digital literacy
- Recent research domain: digital literacy. First year student behaviour compared with later years, Dunning-Kruger effect, frameworks, multiple elements of digital literacy, the library as a source of digital literacy help
- education services by library: copyright advice, creating syllabuses, thesis process, educational resources, digital skills, information literacy. copyright is an aspect of a.o. thesis process, educational resources and creating syllabuses
- Digital literacy and skills training: what people need, what digital literacy is, different levels and approaches people might have, what applications / tools are available, how people approach those different tools, models of digital literacy, public awareness of what skills they might need/want, teaching basic digital literacy vs teaching coding/programming/databases etc.
- Google Apps Script training: automating common/repetitive tasks in daily working - what are people doing regularly that can be clearly written via a set of instructions to follow. Application to 'reali-life' examples like making a cup of tea and translating into 'steps' for coding.
- Digital skills, digital literacy open science, open scholarship, open and closed repositories - copyright, formats, training, communication, policies
- Records management lifecycle and research data managment
- Digital Humanities - Applying digital skills and tools to humaniites research areas, identifying useful tools for research methods and outputs, core skills, critical thinking for DH
- Programming - data structures, loops, conditions, functions ,
- Genealogy and shipping history, primary resources, cross linking datasets and secondary sources
- Digital Skills, literarcy, metadata frame work: relationship include data retrieval and decision making based on this.
- Data literacy: data structures, human intelligence versus computer intelligence,

FAIR active data and FAIR inactive data
Project managemen:: making use of general PM format to identify the business case, the goals, results, stake holders, relatioins, costs etc.to make a contract. Making plans, scenario's etc.

The Importance of Going Slowly
https://carpentries.github.io/instructor-training/fig/mental_models.svg

How "Knowledge" Gets in the Way

Misconceptions

- Factual errors
- Broken models
- Fundamental beliefs

Identifying and Correcting Misconceptions
Formative assessment

Summative assessment

Repetition vs.Reflective practice

Formative Assessments Come in Many Forms

Identify the Misconceptions (10 min)
Choose one of the wrong answers to the question below and write in the Etherpad what the <u>misconception</u> is associated with that wrong answer.
Q: what is 27 + 15 ?
a) 42
b) 32
c) 312
d) 33

 b: forgetting to carry the 1 over to the tens column
 b) 32 - they didn't read the question properly, maybe read through it too quickly
 c) 312 is wrong because they added the 2 and 1 to get 3 and then added 7 and 5 to get 12 and put those together to get 312

 b: they didn't add the 1, could be misunderstanding or rushing
 b forget adding the 10
b) 32 - carried away with adding the 5 first and the value increasing to 30+, forgot the leftover 10 to be applied too
32- added only the 10s, missed to add the rest
d) 33: carry the 1, but add it to the wrong number
c) they multilplied not added?
c.) they thought it is a tricky question, a riddle OR they put they did the addition beneath each other and did not carry the one to the 3
b) they forgot to take the 1 into account in adding up -
e) 3C would be a correct answer in HEX - misconception in what system to use.

b they forgot to carry the one
d they carried the 1 but added to the wrong column
c They added the 2 +1 and they added the 5 +7 to make 312
b) added 5 but forgot to carry over 1

Handling Outcomes (10 min)
Formative assessments allow us as instructors to adapt our instruction to our audience. What should we do as instructors if the class votes for:
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 below:
  1. ask how they got there, re-explain it , rewrite my quesiton, clearing the missconception
  2. ask to ensure they got there for the right reason, move on
  3. ask someone who got it right to explain it, clear up misconceptions for the wrong answers

  •
  •

Modeling Novice Mental Models (10-15 min)

Take 10 minutes to create a multiple choice question related to a topic you intend to teach. Type it into the Etherpad and explain the diagnostic power of each its distractors, i.e., what misconception is each distractor meant to identify?

Formative Assessments Should be Frequent

How Many? (5 min)

The Carpentries use formative assessments often. How many have we done since the start of this workshop? Put your guess in the Etherpad along with one example and the purpose that assessment served.

- 4 - writing down the mental model of my working area, describe missconceptions, discuss solutions to a problem, taking into account what we have being doing
- 3 - examples of what to do when students give varying answers in multiple choice tests
- if mcq - 0 if other other exercises 4 (including one jointly)
- 3 - misconception mcq, difficulty of stepping into novice's shoes
- I don't know
- 1, did not experience it as formative until now,
- 3 - mental map- put personal/already know context to new piece of knowledge
- 3 including this one. Multiple choice question design for understanding where your explanation might have gone wrong
- 3 - this one
- 4 including this one, which is checking if we already know what a formative assessment is
- 3, mental model, misconceptions, this question on formative assessment
- 3 - mcq, this one , mental models
- 2 - Mental models, misconceptions - our understanding for critique
- 2 - mental model, misconceptions - using the first to demonstrate the concept of 'mental models' and see if people have understood it enough to make their own
- 3- how many formative assessments
- **Assessing Trainee Motivation and Prior Knowledge**
- Pre-training sursurv
- 5 introductions

Confronting the Contradiction (Optional)

Describe a misconception you have encountered in your own learning or teaching and how to get learners to confront it.

Key Points:

- Our goal when teaching novices is to help them construct useful mental models.
- This requires practice and feedback.
- Formative assessments provide practice for learners and feedback to learners and instructors.

III. Expertise and Instruction

What Makes an Expert?

What Is an Expert? (5 min)
Name someone that you think is an expert (doesn't matter what they're an expert in). As an expert, what makes them special or different from other people?

- profound and specialized knowledge
- niche knowledge, connected to other fields
- enthusiastic about the subject
- teaching or communication ability NOT always available
- evidence of expertise, knowledge, experience, professional recognition of expertise
- Knowing the consequences of doing something differently ('bending rules', swapping components)
- Being able to estimate accurately how 'doable' a task is using the system.
- being able to predict the outcome of taking a certain approach to a task/challenge
- _**Confidence**_ level in approaching scenario - like a bell curve graph - starts high with minimal knowledge when they learn something quick, decreases later when know what don't know and there's a lot to learn, then increases again as knowledge does. Know the material off-hand when queried.
- Being able to tranlsate knowledge to a non-expert
- Knowing the context of the subject area as well as the specifics
- Knows limits in own knowledge area
- Does something well every day
- Is able to answer questions
- Is able to take feeback and improve
- Is able to apply knowledge and extend knowledge are, push boundaries
- When a person's mental model is complete, there is nothing new that can occur that they can't predict or pre-empt
- expert comes from experience, expertise can be backed up with evidence

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

-
-
-
-

Connections and Mental Models

Limitations of Expertise

Fluid Representations (5 min)
Give at least one example of a fluid representation that you use in your own work. If you can, also give an example of a fluid representation that might occur in a Carpentry lesson.

- E-Learning, digital literacy
- ways of doing loops in code - when you could use either for or while loop, choosing how to create variables for counting, etc - often many different options
- Data models. Do you refer to something as a "class" or an"object", "entity", "concept"... It

- actually depends on the specific language your teach to implement a model but as an expert you use these term interchangeable.
- Digital literacy - everyone has a different concept of its meaning...
- Switching between deposit and submission to the repository - especially confusing for theses as submission is usually for exam and not the final library copy
- In connection in keeping raw data raw the documentation refers to transfer data. This is a fluid use of the term. Should I ask you to transfer fund from your bank account to mine we both dont have the funds. Rather than transfer we copy raw data to keep it raw.
- Form - an electronic form to be completed to submit data (one-way data entry like a Google Form) or an instructional document with reports, etc but a single place where one piece of data is entered.
- "information literacy": my colleagues use this as shorthand for: IL training.
- "reader" is it someone who reads, someone who borrows from the library, or a syllabus?
- post-print article version - is it the published version, the final reviewed version, the accepted version...?
- WITCAT - Waterford Institute of Technology's Library Catalogue or Multisearch for our federated search engine
- Disaster Management Plan (DMP), Data Management Plan (DMP)
- reproducible - different meanings/standards for what this means - does it mean you can repeat the exact steps or get the same outcome
- OER: open educational resources; onderwijs examen regeling
- In our repository, deposit = send for review.
- data means different things.
- An "archive" is something very different to archivists and IT people
- Shell = command line = command prompt = terminal
- RDA in a library: Resource Description and Access or Research Data Alliance (and Research Data Australia! and Research Data Archive)
- Data Curation - dealing with metadata or the data itself
- GUI -catalogue and the command line (SQL)
- fake news

Diagnosis (5 min)

What is an error message that you encounter frequently in your work? (These are often syntax errors.) Take a few minutes to plan out how you would explain that error message to your learners. Write the error and your explaination below.

-
-
-
-

Blind Spots (5 min)

Is there anything you're 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?

- Modern Greek - pronunciation
- SQL - Sequencing of the command
- Coding - have to recycle unless it is a very simple task

- typing with 10 fingers
- Google Apps Script - make use of Google's App Development website for actions/examples and online resources. Or previous examples where I have already performed the action.
- coding loops in sas
- More unusual commands in git / GitHub - which ones I can do through the GitHub interface and when to switch to Desktop or command line
- Learning how to transfer knowledge. Why is something logical to me but not to others? I have to listen a lot and ask questions continously.
- writing project back logs for scrum
- Using implicit variables in Perl
- Deep learning - final output layer for a model, would need to google this when implmenting from scratch

using this pad where multiple users are editing concurently

- Use the x-box controls. My kids can.
- Remembering commands in rowing
- command line programming - looking up what the letter commands are

Think about the area of expertise you identified earlier. What could a potential blind spot be?

- Not knowing the full intricacies of Apps Script commands/combinations to apply to problem-scenarios, limiting the solution capabilities and time spent if more efficient processes.
- In the maintenance the blind spot is assuming the instruction to carry out a job is understood and carried out correctly where it has not been done by the person previously.
- Open Source
- organizational sensitivities
- Expecting a colleague will remember the answer to the question they are now asking because I gave them the answer last week!
- Bias - prejudice
- Assuming others khow how to run a particular bit of code
- Preconcieved perceptions of data subjects
- Forgetting which terms and concepts people might be familiar with when completely new to something, even with comparative references (e.g. data types, try and explain numbers and strings and compare to spreadsheets)
- That the machine-readability of the FAIR principles is not evident, and how others fit the concept of FAIR into their conceptual model
- Not being aware of emerging trends
- Familiarity with interfaces of systems I use all day that researchers only use every few months
- Something working for the "wrong" reasons in some code

Dismissive Language

Changing Your Language (5 min)
What other words or phrases can have the effect of demotivating learners? What alternatives can we use to express this meaning in a positive and motivational way? In the Etherpad, make a list of demotivating words/phrases and alternatives.

- "It is obvious that..."
- The other class is better at this than you..ageism, racism, sexism, cultural problems
- No, why would you want to do that? (alternative: could you explain your approach or what you're aiming to achieve?)

- I wouldn't do it that way. (alternative: there are a couple of ways doing that, how about ... ?)
- use acronyms without explaining
- i was called stupid by a math teacher 40 years ago
- "who are you to say this is relevant for me?"
- belittling your topic
- doubting your capacity as a learner
- "As you probably already know..." -> you will come across this a lot...
- body language of the teacher, being ignored
- 'just' (alternative: 'you could start by...'
- Dismissing other solutions (especially other programming languages)
- Dismissing without explanation
- "No" (alternative: "I see what you're saying, do you think it's relevant here? Perhaps it's more relevant to this...")
- "you are the only one questioning this so it is not important to discuss"

You Are Not Your Learners

The Importance of Practice (Again)

Key Points:

- Experts face challenges when teaching novices due to expert blind spot.
- Expert blind spot: knowing something so well that it seems easy when it's not.
- With practice, we can learn to overcome our expert blind spot.

IV. Memory and Cognitive Load
See Miller in the 1950ies: "The Magical Number seven plus or minus two"

Types of Memory

Test Your Working Memory (5 min)
(https://cat.xula.edu/thinker/memoryworking/serial   implements a short test of working memory. You will be presented with a variety of different symbols, each presented for only a very short time, and asked to select those that you remember from a second set of symbols. There are 21 steps to the quiz, after which you can skip over the survey to see your results.

What was your score? Write your answer below.
- 7
- 4
- 5
- 5
- 6
- 4
- 5
- 3
- 4
- 5
- 7

- 5
- 6
- 6
- 8
- 4
- 6
- 4
- 3

Strategies For Memory Management

Improving Short-term Memory with Chunking (5 min)

Repeat the memory exercise you did earlier, but this time, try to form short stories or phrases from the words you see.

Write the number of words you remembered in the Etherpad. How does this compare with your first attempt?

- 8 (+2)
- 4 (-1 !)
- 6 (same)
- 7 (+1)
- went from 4 to 9
- from 3 to 6 - if I do it again will it be 9???
- 3 (-1) but I remembered something in the middle!
- 8 (+1 but needed 2 attempts as the first round had too many random words I couldn't connect)
- 8 to 5
- 6 (+1)
- 7 (same), but tried to using chunking first time as well!
- 5, 5
- 5 (+2)
- 6 (the same)
- 5 to 8
- 5

Active Learning Through Formative Assessment

Concept Maps as Instructional Planning Tools

Concept Mapping (10 min)

Create a hand-drawn concept map for a part of a Carpentries lesson you would teach in five minutes (ie. the amount of material you would teach before doing a formative assessment). You can use the same subject about which you created a multiple choice question, or a different subject. Trade with a partner, and critique each other's maps. Are there any concepts missing in your partner's map that you would include? Are there more than a handful of concepts in your map? If so, how would you re-divide those concepts to avoid overwhelming your learners' working memory?

Take 10 minutes to draw the concept maps and share with your neighbor. Write "*done*" in the Etherpad chat once you have finished.

Other Uses of Concept Maps

Why Guided-Practice is Important

Five Years later: A Review of Kirschner, Sweller and Clark's *Why Minimal Guidance during Instruction Does Not Work*
http://bdld.blogspot.com/2011/06/five-years-later-review-of-kirschner.html

Faded Examples

```python
# total_length(["red", "green", "blue"]) => 12
def total_length(words):
    total = 0
    for word in words:
        total += len(word)
    return total
```

```python
# word_lengths(["red", "green", "blue"]) => [3, 5, 4]
def word_lengths(words):
    lengths = ____
    for word in words:
        lengths ____
    return lengths
```

```python
# concatenate_all(["red", "green", "blue"]) => "redgreenblue"
def concatenate_all(words):
    result = ____
    for ____ in ____:
        ____
    return result
```

```python
# acronymize(["red", "green", "blue"]) => "RGB"
def acronymize(words):

    ____
```

Create a Faded Example from a Lesson (10 min)
The following exercise should be done in groups of 2-3.

1. Pick a block of code from an existing Carpentries lesson, or from another lesson you have taught recently.
2. Replace 2-3 pieces of the code with a blank.
3. Write a question to test the student's ability to correctly fill in that blank.
4. Paste your faded example in the Etherpad.

Summary

Key Points

- Most adults can store only a few items in short-term memory for a few seconds before they lose

them again.

- Things seen together are remembered (or mis-remembered) in chunks.
- Teaching consists of loading short-term memory and reinforcing it long enough for items to be transferred to long-term memory.
- Use formative assessments to avoid overloading short-term memory.

V. Building Skill with Feedback

Surveys
For links to our surveys see: https://carpentries.github.io/instructor-training/06-feedback/#surveys

Minute Cards

One-Up, One-Down

Give Us Feedback (5 minutes)
Write one thing you learned this morning that you found useful on one of your sticky notes, and one question you have about the material on the other. 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.

Key Points

- Give your learners time to fill out the post-workshop survey at the end of your workshop.
- Take the time to respond to your learners' feedback.

Interest in O'Neill's, add your name: http://www.oneillspubdublin.com/
2 Suffolk Street, Dublin 2
Google maps link: https://goo.gl/maps/vfv6sQt3SZyRDzCSA
Matthijs +31655057854
Edit
Kristina with colleague Laurents who is flying in tonight
Juliane (+1 781-249-3600)
Daniel (447986408886)
Da vid Kane 00353 87 6693212
Armin

VI. Motivation and Dem otivation

Creating A Positive Learning Environment

- Presenting the instructor as a learner.
- Establishing norms for interaction.
- Encouraging students to learn from each other.
- Acknowledging when students are confused.

Teach Most Useful First
https://carpentries.github.io/instructor-training/fig/what-to-teach.png

Authentic Tasks: Think, Pair, Share (10 min)
Think about some task you did this week that uses one or more of the skills we teach,
(e.g. wrote a function, bulk downloaded data, built a plot in R, forked a repo) and explain how you would use it (or a simplified version of it) as an exercise or example in class.
Pair up with your neighbor and decide where this exercise fits on a graph of "short/long time to master" and "low/high usefulness".
Share the task and where it fits on the graph with the class. As a group, we will discuss how these relate back to our "teach most immediately useful first" approach.

Other Motivational Strategies

Strategies for Motivating Learners
How Learning Works by Susan Ambrose, et al, contains this list of evidence-based methods to motivate learners.
With your table, pick three of these points and describe in one sentence in the Etherpad how can we apply these strategies in our workshops.

- Strategies to Establish Value
    - Connect the material to students' interests.
    - Provide authentic, real-world tasks.
    - Show relevance to students' current academic lives.
    - Demonstrate the relevance of higher-level skills to students' future professional lives.
    - Identify and reward what you value.
    - Show your own passion and enthusiasm for the discipline.
- Strategies to Build Positive Expectations
    - Ensure alignment of objectives, assessments, and instructional strategies.
    - Identify an appropriate level of challenge.
    - Create assignments that provide an appropriate level of challenge.
    - Provide early success opportunities.
    - Articulate your expectations.
    - Provide rubrics.
    - Provide targeted feedback.
    - Be fair.
    - Educate students about the ways we explain success and failure.
    - Describe effective study strategies.
- Strategies for Self-Efficacy
    - Provide students with options and the ability to make choices.
    - Give students an opportunity to reflect.

Brainstorming Motivational Strategies (5 min)
Think back to a computational (or other) course you took in the past, and identify one thing the instructor did that motivated you. *Pair* up with your neighbor and discuss what motivated you. *Share* the motivational story in the Etherpad.

- opening the floor for teambuilidng and to get to know each other and their problems, moving around physically around in the room, changing the perspective in different ways, sharing best practices and failures, creating curiousity how problems were solved, variety of assessment, create a safe atmosphere for everybody - participants as instructors
- the teacher making the effort in trying to explain something in a different way if the textbook

explanation does not suffice
- Starting with something useful that could be reaplied for other tasks fairly easily. Skipping some of the theory in the process when it wasn't necessary to apply the method/approach
- Instructor making mistakes and being honest about it as it shows you don't have to be perfect and won't be after the training and googling is perfectly fine. Focus on the positive and show that you can make mistakes and still pass the course.
- Room for reflection on practical exercises and thus learning from others about their use cases
- Having an exercise that combined a complex yet useful concept (in this case, APIs), with something fun and memorable (in this case, the PokéAPI, so Pokémon) so it is both relevant and a fun accomplishment before moving onto to more dry examples.
- At the end of a coding course, the instructor offered prizes for people who could use their new skills to complete a challenge!

How Not to Demotivate Your Learners

Brainstorming Demotivational Experiences (5 min)
Think back to a time when you were demotivated as a student (or when you demotivated a student). *Pair* up with your neighbor and discuss what could have been done differently in the situation to make it not demotivating.*Share* your story in the Etherpad.

- long presentations even if it s important, saying "the topic is too complex we will not cover it sufficiently"- =>CHANGE it into: we get you started, we will give you the tools to have a first go and be able to work /learn on your own, workshops which are not planned well and go on without being changed =>CHANGE it adaption,
- starting the course with a long list of pre-requists (some of which might not be necessary) - could be better to start with 'what you'll be able to do by the end of the course instead'
- rushing through a large slide deck, pressured to finish the whole talk even if over time
- The sentence: "As you all know"
- Putting too much emphasis of the basic level of a session
- Instructors that come across unconfident (particularly from the word 'Go'!) - creates worry and unease on being assisted.
- Instructors that make too many mistakes - the class spends more time shouting corrections
- Going off on too much of a tangent.
- Bad drawings
- Don't single out individual students in any way
- I once illustrated a principle using an example from quantitative research, and it alienated a qualitative researcher on the course. We now either run parallel sessions for different domains or try to use multiple examples.

Therese Huston: Teaching what You Don't know Therese Huston (book review: https://carpentries.org/blog/2018/04/teach-don%27t-know-review/) http://www.hup.harvard.edu/catalog.php?isbn=9780674066175

Psychological Demotivators
- Impostor Syndrome - use mentors who are generous
- Accessibility Issues

- Lack of Inclusivity

Learning About Accessibility (5 min)
The UK Home Office has put together a set of posters
(https://github.com/UKHomeOffice/posters/blob/master/accessibility/dos-donts/posters_en-UK/accessibility-posters-set.pdf) of dos and don'ts for making visual and web-based materials more accessible for different populations. Take a look at one of these posters and put one thing you've learned in the Etherpad.

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Inclusivity

Key Points

- A positive learning environment helps people concentrate on learning.
- People learn best when they see the utility in what they're learning, so teach what's most immediately useful first.
- Imposter syndrome is a powerful force, but can be overcome.
- Accessibility benefits everyone.

VII. Mindset

The Importance of Mindset

Does Mindset matter? (5 min)
Think: What kind of mindset do you have about different areas? Is there anything you believe you are "not naturally talented" at? Mindset often varies in different areas – someone might have a fixed mindset with respect to artistic ability, but a growth mindset with respect to computing skill. Then, think about your learners. How might a learner's mindset about computational skill influence their learning in a workshop setting?
Pair: Discuss your thoughts about the influence of mindset in a workshop. Try to come up with a few different ways or situations in which mindset might be relevant.
Share: A few thoughts in the etherpad (or go around the room and discuss)

Praise Influences Mindset

Choosing our Praises (5 min)
Since we're so used to being praised for our performance, it can be challenging to change the way we praise our learners.
Which of these are examples of performance-based, effort-based, or improvement-based praise?

- I like the way you tried a couple of different strategies to solve that problem.

- You're getting really good at that. Keep up the hard work!
- You're really talented.
- That was a hard problem. You didn't get the right answer, but look at how much you learned trying to solve it!

Errors are Essential to Learning

Helping Learners Learn From Mistakes (5 min)
A learner at your workshop asks for your help with an exercise and shows you their attempt at solving it. You see they've made an error that shows they misunderstand something fundamental about the lesson (for example, in the shell lesson, they forgot to put a space between ls and the name of the directory they are looking at). What would you say to the learner?
In the Etherpad, describe the error your learner has made and how you would respond.

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Perseverance Predicts Success

Habits of Lifelong Learners

Key Points
- Growth mindset and grit promote learning by making effort a positive thing.
- Presenting errors as essential to the learning process helps learners learn from their mistakes.
- Successful lifelong learners aren't embarrassed to ask for help.

VIII. Teaching is a Skill

Lesson Study: Applying a Growth Mindset to Teaching

Giving Feedback (10 min)
We'll start by observing some examples of Carpentries-style workshop teaching and providing some feedback.
Watch this example teaching video (https://www.youtube.com/watch?v=-ApVt04rB4U) as a group and then give feedback on it. Put your feedback in the Etherpad. Organize your feedback along two axes: positive vs. negative and content (what was said) vs. presentation (how it was said).
Content +

- Did go over what was covered previously
- Used common language for dummy variables (like "foo")
- Some important concepts were included
- He can use a keyboard .... mostly
- did seem to know how to write code

Content -

- Inconsistent and not fluid - examples did not lead into each other smoothly
- loads of terminology/concepts introduced which wasn't required for what was being taught

- making up values but being uncertain / changing mind about what to do
- When making a mistake, not taking the time to describe the mistake and what he did to correct it
- thought of the learners as already knowing
- Very little interaction
- foo/bar isn't super clear when people don't have CS background
- Content on the fly was not contiguous
- being dismissive of other technology being used

Presentation +

- Couldn't see the content of the presentation, so it's difficult to judge
- At least he turned up.
- making errors!
- Enthousiastic
- He seemed knowleadgable
- Was demonstrating on screen
- Seemed personable
- Punctual
- lively presentation
- Errors were easy to pick up and learn what not to

Presentation -

- checking phone during presentation
- vague, insulting, rude, unprepared
- Using words like "Just" and "of course" and "really simple stuff" if you do not know that it is what you expect, "trust me"
- Presenter was jumpy and would make students nervous perhaps, no flow to the presentation
- Presenter made an ammendment on screen and said "dont worry about this" but could have been important for student
- Presenter said "And then we do this" but did not explain what it was
- "I'm just gonna fix this up": would be good to talk through what went wrong and how to fix it.
- Room was too dark with unnecessary lamp reflecting off back of laptop
- way too quick
- possibly not prepared, seemed to be making it up as he went along in parts
- impatient
- don't let people settle before starting
- started and stopped and started someweher else
- style of changing mind is stressful to watch / keep up with
- presented to the screen at one point
- Not clear about what the learning objective was

Feedback on Yourself (25 min)

1. Split into groups of three.
2. Individually, spend 5 minutes preparing to teach a 90-second segment of the lesson episode you chose before the start of the training course.
3. Get together with your group and have each person teach their segment to the group, while one person records this (video and audio) using a cell phone or some other handheld device. Use a whiteboard or other visual aids if available (Note: Do not live code you lesson. There will be a chance to live code later.) Keep a strict time limit of 90 seconds per person.
4. After the first person finishes, rotate roles (they become the videographer, the audience becomes

the instructor, the person who was recording becomes the audience) and then rotate roles again.
5. After everyone in the group of three has finished teaching, watch the videos as a group. Everyone gives feedback on all three videos, i.e., people give feedback on themselves as well as on others.
6. After everyone has given feedback on all of the videos, return to the main group and put everyone's feedback about you into the Etherpad.

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- content
- - forgot to tell why it is important to tell this to us
- - it is not interesting to repeat 3 times that you will treat this in another session
- + explained acronyms
- - not enough detail
- + good contextualization of why content is important
- + knowledgeable, moved fluidly, covered a bit of background before lesson content
- - used word 'thing' in place of term at one point
- presentation
- + good english
- - don't point at the audience with your finger
- +assess how much your audience knows about the subjet (at the beginning)
- + eye contact, good pace
- - used hmm.. a lot and had a restless body language
- - possibly used hands gesturing too much
- + used different media and was clear
- Timekeeping: always difficult to stay on schedule
- There always need to be the why before the how
- + Good body language and use of gestures
- + Relating content to what people are familiar with
- - There are better ways of checking everyone is ready to continue

Feedback Is Hard

Using Feedback (5 min)
Look back at the feedback you received on your teaching in an earlier exercise. How do you feel about this feedback? Is it fair and reasonable? Do you agree with it?
Identify at least one specific change you will make to your teaching based on this feedback. Describe your change in the Etherpad.

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Key Points
- Like all other skills, good teaching requires practice and feedback.
- Lesson study is essential to transferring skills among teachers.
- Feedback is most effective when those involved share ground rules and expectations.

IX. Wrap-Up and Homework for Tomorrow

To prepare for tomorrow, please:

1. Look through these checklists to learn what hosts and instructors need to do to prepare for a workshop (https://docs.carpentries.org/topic_folders/hosts_instructors/hosts_instructors_checklist.html), and read over the difference between a centrally-organized and self organized workshop at the bottom of this page (http://www.datacarpentry.org/workshops-host/).
2. Prepare for the live coding exercises. If you haven't already, pick an episode from an existing Software, Data or Library Carpentry lesson and read through it carefully. Tomorrow, you will use this to practice live coding for 3 minutes in groups of three. Your group members will comment on the delivery and content. Recommended episodes are listed here: https://carpentries.github.io/instructor-training/12-homework/.

Feedback (5 min)
The Trainer(s) will ask for feedback on the day in some form.

Reflecting on the Day (5 min)
Before we wrap up for the day, take 5 minutes to think over everything we covered today. On a piece of paper, write down something that captures what you want to remember about the day. The Trainers won't look at this - it's just for you.
If you don't know where to start, consider the following list for a starting point:

- draw a concept map, connecting the material
- draw pictures or a comic depicting one of the day's concepts
- write an outline of the topics we covered
- write a paragraph or "journal" entry about your experience of the training today
- write down one thing that struck you the most

Pad: https://pad.carpentries.org/ttt-ucd-library
Day 2 Sign in

- * Tim Dennis, timdennis@ucla.edu, @jt14den
- Juliane Schneider, Juliane_Schneider@hms.harvard.edu, @JulianeS
- Phil Bainbridge, University of York, phil.bainbridge@york.ac.uk
- Siobhan Dunlop, University of York, siobhan.dunlop@york.ac.uk
- Sinéad Keogh, University of Limerick, sinead.keogh@ul.ie, @Zidatom
- Assumpta Byrne, Athlone Institute of Technology, abyrne@ait.ie, @ambyrne
- Daniel van Strien, daniel.van-strien@bl.uk
- Alex Ball, University of Bath, ab318@bath.ac.uk
- Edit Gorogh
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- Cornelia Eitel, University Library of Basel, cornelia.eitel@unibas.ch

- Garret McMahon @gmcmahon
- Armin Straube, a.straube@ucl.ac.uk
- Ken Lacey TU Dublin ken.lacey@dit.ie

X. Welcome Back

Questions (5-10 min)

Yesterday we asked you to read some resources about the logistics of teaching and running Carpentries workshops. Please add your questions about logistics and preparation to the Etherpad. We will answer these questions in the etherpad during your work time and will return to this list later today.

Great resource: the Carpentries Handbook (I reference this all the time):
https://docs.carpentries.org/index.html

- How much can you change the lessons and still brand it under the 'carpentries'?
    - How would the above be monitored?
- How does etherpad work with GDPR? General Data Protection Regulation, which is an EU data protection law, see https://en.wikipedia.org/wiki/General_Data_Protection_Regulation
- Where do I find carpentry-people in my region/country? Do they meet or how are they organized to share experience and develop new material?

Answer: there are regional coordinators you can contact for the groups in your region https://carpentries.org/regionalcoordinators/ There is also the Slack community https://swc-slack-invite.herokuapp.com/ which has several sub-communities for local groups
Check out list of instructors https://carpentries.org/instructors/ and look for the ones in your country

- How does the developement of new courses work?

Answer: It's sort of complicated, but here is the link that describes the process:
https://docs.carpentries.org/topic_folders/lesson_development/lesson_development_roles.html
It starts with interest in the community channels for a lesson, goes through various committees and goes through a dev and beta process and finally becomes part of the official "curriculum"

- How did it happen, that the recent modules were chosen - they are great, but what were the alternatives?
- Are there any fees for carpenty sessions not organised through the carpentries? What's the advantage of being at a member institution?
- Are there any library initiatives to use the Carpentry style and method for students and researchers, Not about software or data BUT on basic information literacy?

Key Points

- Instructors guide learners to construct the proper big picture (accurate mental model) of the topic rather than focus on details.
- Instructors rely on frequent feedback from learners to monitor their own presentation of the material.
- Instructors introduce a few concepts at a time to avoid cognitive overload.
- The best way to motivate learners? Show them how to do something they can immediately put to use and be enthusiastic about it.
- Teaching is a learned skill.

XI. Live Coding is a Skill

Why Participatory Live Coding?

Up and Down (10 min)
List some advantages and challenges of participatory live coding from both a learner's and an instructor's point of view.

- Different speed of learners - how to make sure that everybody keeps up?
- Learner - seeing the instructor making a mistake - advantage
- - What is she typing? Talk while typing (especially the invisible keystrokes)
- - Listen and watch (and type?) at same time
- demo or doing it together - both has pro and cons
- doing demos - clarify that their will be time to try it out, in order that nobody gets stressed
- checking if every body is on track regarding the objectives of the course - should be done regularly, about every 15'
- Learners can get used to the real system, in a safe, guided environment. It's like the difference between having a tour guide and reading a guide book before you go.
- +'Human' aspect of actually seeing code being produced right there, right then
- - It creates a layer of abstraction between the humans inputting and the learners themselves. We speak to the screen rather than the individuals.
- I would be happy if the whole process (incl. installation o fthe programme) is included in the dem
- Helps students to get started and have some initial sucess

Compare and Contrast (15 min)
Watch the two live coding videos as a group and then summarize your feedback on both in the Etherpad. Use the 2x2 rubric for feedback we discussed earlier.
In the videos, the bash shell *for* loop is taught, and it is assumed learners are familiar with how to use a variable, the *head* command and the content of the basilisk.dat unicorn.dat files.

poor live coding: https://www.youtube.com/watch?v=bXxBeNkKmJE&feature=youtu.be
Content + explains that shell is still waiting

- Seems to be an expert (AB)
- Shows that loop variable can be anything
- Knows content

Content -

- No explanation of steps
- Presumption that the students have a lot of knowledge already
- not explaining motivations for learning/using for loops in bash
  - not very exciting - repeats steps and in monotoned voice

Presentation +
Screen is wide and visible

- Clearly audible
- Students vision un-obstructed
- pace was good

Presentation -

- Should not sit, standing is better for teaching
- I did not hear well
- Too fast, no explanation (AB)
- Tallking too fast
- Ken -
- Screen out of focus, notifications were not disabled. Not commenting on actions. No contact with students
- No eye contact
- Not explaining/commenting on mistakes/typos and just doing quick fixes
- Never checked if what he was talking about was understood
- not talking through the steps
- typing quickly
- No interaction with class
- Not looking up from his computer into the class
- Reading from the screen only as if he is on his own
- sitting and not moving at all
- disturances (phone, skype, etc)
- Apparent news item website in the background providing unwanted distraction
- it is more a demo then live coding, no comments on actions nor on results and effects

Too fast - garret
Interuption by laptop alerts - garret
Did he explain what he did on the keyboeard?

- Mobile phone on volume and browser in the background distracting
- No questions or interaction with the class
- talking to himself, not explaining what he is doing
- was hiding behind his screen - was really far off

good live coding: https://www.youtube.com/watch?v=SkPmwe_WjeY&feature=youtu.be
Content +

- explains the steps
- made a mistake and explains what happened
- explains how to repeat commands
- Explains how a command is built up and can be broken down
- repeats content
- Ken - Content is reinforced by repeating a number of times in demo
- explains different ways of doing it e.g. different ways of naming variables
- explains why the repeated comand is on one line

Content -
Would need more explaination to include all levels of knowledge in class
No questions asked like "do you understand" or "is everyone OK with this?"

- could be good to explain why you would do this (maybe did this already)

Presentation +

- good interaction with the students; physically very present in the room
- asking student to take down post-it to make sure everyone is at the same step

- Pointing to screen to allow students to follow
- Explains result
- Standing
- using 'standard' terminal interface? not sure this always good
- bigger font
- Talking while coding
- Screen is white
- Explains the consequence of his mistake
- points to the screen
- eyecontact
- Lively using his hands to pointt thigns out, interaction
- Commenting on everything he's typing
- Font legible
- clear explaining, prevents learners from typing themselves (<- is this a good thing?)
- pauses to explain steps
- pointing at what he is talking about
- was standing and able to type and show things,
- Ken - Interactive and interesting. Good explaination of steps highlighting on screen
- took things slowly
- shows the steps on the screen
- checked everyone was ready before continuing (spotted red sticky note)
- when mentioning pitfalls he explained by saying "trust me I've been there" - instructor as learner

Presentation -

- Still fast!
- Little or no engagement with students, no formative assessment techniques used
- no interaction (yes, this!)
- No feedback from students

Top Ten Tips for Participatory Live Coding in a Workshop
Sticky Notes

Online version of open refine: https://github.com/betatim/openrefineder

Practice Teaching (25 min)
Teach 3 minutes of your chosen lesson episode using live coding to one or two fellow trainees, then swap and watch while the other person(s) live codes for you. Explain in advance to your fellow trainee(s) what you will be teaching and what the learners you teach it to are expected to be familiar with. **Don't record the live coding sessions.** Give each other feedback using the 2x2 rubric we discussed previously and enter the feedback you received in the below.

- Did not cope with my genuine mistake as well as my artificial mistake!
- Made good use of commands learned in previous episode.
- content: + covered the content and explained most of the settings well
- content+: interesting, new stuff
- content: - audience could not see the impact of changes mentioned

- presentation: + no interaction with audience beyond first greeting
- good interactions, asked if we had questions and if we were keeping up
- presentation: - good pace and mouse tracking
- We all used 'extraneous load' -- had to give a lot of background or 'sideground' info to make it work in the 3 minutes
- Not enough time
- + repeating content

Key Points

- Live coding forces the instructor to slow down.
- Coding-along gives learners continuous practice and feedback.
- Mistakes made during participatory live coding are valuable learning opportunities.

XII. Preparing to Teach

Learner Profiles

Learner Profiles (10 min)
Read Software Carpentry's learner profiles (https://software-carpentry.org/audience/). Note that these example profiles contain more information than you will ever know about a learner; this is a creative exercise in imagining (and empathizing with) the whole people behind the faces. Now, sketch out a profile of someone you might expect to attend your first workshop. Who are they, what problems do they face, and how might this training help them? Be as specific as possible.
Enter your learner profile below.
=> might be done after the survey of the participants interests
=> might be published with the course intro to give orientation to the participants

Who they are: Lena is a librarian and open access specialist. She took one programming course many years ago but does not program or use computational tools in her daily practice.
   What problems they face: Cleaning excel files, creating summary statistics and documenting this process in a workflow
   How might this training help them: OpenRefine can help Lena automating some of her cleaning steps thus saving time for her. R can help her create the summary statistics in a reproducible way. Both these tools will enhance the transparency and reproducibility of ther work, and save time.

Aubrey is a metadata librarian focusing on cataloguing art related material. They need to batch clean metadata records, especially in relation to an upcoming tidy up of the classification of art books as they get moved to a new space in the library. Attending a library carpentry session will provide Aubrey with an overview of OpenRefine and how she can use it to automate some of the cleaning steps required.

Who they are: They are a group of colleagues (Library professionals) who use the library management system on a daily basis but would like to have a better understanding of how it works (i.e running SQL queries to run reports)
Angela is an acquisions librarian who is very apt in using the library management system
Problems that they face: Need to be able to run reports from the system to idenitfy what books are ordered in the library management system and which are pending
How might this training help Angela? A library carpentry lesson on SQL will help Angela be more able

to run reports on the system and carry out SQL queries

Celine is a subject librarian for the humanities. She heard about Research Data Management and new roles for librarians, having to do with data curation. She participated at standalone trainings on Research Data Management in general, but did not do any trainings or counseling herself. She is working with metadata, but only in the context of the catalogue and her everyday practice is related to content specific metadata. She heard about different standards and convention of metadata for different objects, but did not put it into practice. Her passion is her discipline specific collection and its use for teaching and research. A library carpentry training, using the metadata of her subject areas as exemplary datasets, will allow her to use openrefine in order to search for new ways to edit the metadata of her collection and to build up first capabilities regarding data curation.

Who: library staff. Requirement: To convert archival collection finding aids in Excel spreadsheets (and Word) to MODS metadata records for ingestion to digital library. Workshop: OpenRefine workshop will show them how to clean and standaradise the data, use it to map to MODS fields and export as MODS xml files

Mary Margaret McMullan is a library staff member in the Irish Higher Education sector. She used to create reports for her boss on the old library system without knowledge of SQL. However, the new library system uses SQL reports, Mary Margaret has no SQL experience. The new library system gives help to users creating guided reports but Mary spends her time using Excel to find the specific group of report results she needs. A knowlege of SQL, in particular the WHERE clause, would greatly help to save Mary Margaret's time and reduce frustration!

Dirk is a third year bachelor student in finance, about to start writing a bachelor thesis for which he needs to do empirical work. He is familiar with empirical techniques from his classes, and has practices statistics on cleaned data that was given to him by his teachers, but he has very little experience on getting started with real world data that is more messy. A Data Carpentry workshop can help him to understand the principles of how to structure data, and will teach him a numer of useful commands in R, although the principles can also be applied using other software.

Andy is a 60 year old professor in French literature and culture and dean of the college of humanities. He has had his assistants and always has been more interested in literature than in software.Recently he put aside an advise of the central informatioin architecture department, and chose a system for his own faculty wchich his local functional and application managers wanted to have. He doubts his choice and realises he needs to lift his digital and computational skills in order to being able to talk to his computer staff. .

A group of librarians and library assistants have no code experience and little understanding of the context and usefulness of coding. They may or may not work with data, and may not be aware of the fact that they work with data in the first place. The fact is, with no knowledge of coding, they don't know what they need to learn or if coding could indeed help them in work, but feel that if they just knew what exactly coding was, they may find uses for it. Library Carpentry will demystify the sacred cow of coding by teaching the context, practical applications relating to their work and basic structures of coding so that they can decide for themselves if it is a worthwhile pursuit.

Natalie is a social scientist working with loads of data in xcl sheets. She is storing these data sets on her computer and an external harddrive. She has no coding experience. She might need some basic information and experience with programs, like OpenRefine to help her manage her datasets. The goal is

for her and her team to use an interoperable system that prepare datasets to upload into an institutional repository.

Alex is a library staff member with no coding experience who works with the library collections. They have some self-taught spreadsheets knowledge, but don't know much about data structures and working with data. They have started getting data in various CSV and Excel formats, but the data is often messy and contains errors. Their boss wants them to be able to work with the data, but in its current state they are unable to work with it and don't know what to do. Library Carpentry will introduce some ideas about working with data and offer tools like OpenRefine that will give Alex options for dealing with this and future datasets. It will also help Alex know if they want to pursue further training and experience with working with data as currently it seems like a big and scary concept.

Donald is an administrator within the Chemistry department performing a repetitive manual task when other staff book rooms for presentations. They want to know if there is a way to automate the process of creating a document from the details entered in a Google Form, but have no experience of scripting (for automation). The process is likely to be used more and more as a way of auditing room bookings but there is less and less time to dedicate. Library Carpentry will introduce the concepts of Google Apps script with a focus upon auto-generating Google Docs each time the Form is submitted.

Claire is a librarian working in the cataloguing dept. She is dealing with a set of bibliographic records from a legacy system and wants to check the dataset before migrating it to the in house LMS. She has strong knowledge of her metadata and book cataloguing but limited experience of working with large datasets and no experience of OpenRefine.

Henry is a subject specialist for the humanities at a large academic library. He and his team want to keep track of the academic output of their faculty and self-reporting (and use of the institutional repository) is clearly not working. Henry wants to learn the skills necessary to set up some scripts querrying APIs of publishers and aggregators and to build and analyse data sets to adequatly report on the scholarly publication output of his university. Henry is well versed in the use of large spreadsheets, but has no coding experience.

Fred is an information specialist with 15 years of experience in the University of Applied Sciences. He is faculty liaison for Economics and Business and involved in information literacy education for students of all levels. He often experiences that some of his coworkers are able to handle their software problems more easily and get their work done faster. He feels he is lagging behind but does not talk about it very often. He makes a lot of calls to the IT servicedesk because of e.g. non working hyperlinks (with spaces in them). The Introduction to data course will help him feel more confident about his own skills, be inventive and solve his software problems more easily

A group of researchers on a collaborative project have a varied amount of techical knowledge and coding experience. Some have extensive experience in software development whilst others have never done any programming or used the terminal. It is important that everyone has some shared understanding of the tools used on the project and that there is a common technical level that can be ocnverged on. Gaining an underserstanding of how to use the command line gives everyone the ability to see and work with large amouts of data that is stored in cloud storage. Knowing enough command line to be comfortable in SSHing into a machine and being able to run basic commands from the command line.

Who: Xanthe is an information librarian. She has a degree in information science but her only IT training and experience is with MS Office.

Problems: Xanthe collects feedback from training courses as a spreadsheet. All courses feed into the same spreadsheet and she needs to separate out feedback from different courses so she can feed the results back to the respective trainer.

Relevance: Xanthe is hoping to learn how to write a program that will cluster the results into courses and put them into separate files she can send out.

Data Dave has completed his research and is preparing to publish his paper in the University's repository. The data was collected accross contenents and therefore has local date, launguage and location codes.

A condition of funding was the researdh data and findings must be published in the open source repository.

In order to meet the open source requirements the raw data which was stored in a propitory file format must be cleaned and saves in text format such as .csv.

The raw data was must be standardised in terms of launguage, dates and location codes recorded and be accessable with future products.

Reverse Instructional Design (and Preparation!)

Working With Learning Objectives

Evaluate Carpentries Learning Objectives (10 min)
Select one learning objective from one of the lessons linked to below and then complete the following steps to evaluate it.

- Data Carpentry
    - http://datacarpentry.org/OpenRefine-ecology-lesson/01-working-with-openrefine
    - http://datacarpentry.org/sql-ecology-lesson/01-sql-basic-queries/
    - http://datacarpentry.org/R-ecology-lesson/02-starting-with-data.html
    - http://datacarpentry.org/python-ecology-lesson/02-starting-with-data/
- Software Carpentry
    - https://swcarpentry.github.io/shell-novice/03-create/
    - https://swcarpentry.github.io/git-novice/04-changes/
    - https://swcarpentry.github.io/sql-novice-survey/01-select/
    - https://swcarpentry.github.io/python-novice-inflammation/02-loop/
    - https://swcarpentry.github.io/r-novice-gapminder/05-data-structures-part2/

https://librarycarpentry.org/lessons/
* https://librarycarpentry.org/lc-open-refine/04-faceting-and-filtering/index.html
* https://librarycarpentry.org/lc-open-refine/05-clustering/index.html
https://librarycarpentry.org/lc-open-refine/07-introduction-to-transformations/index.html
https://librarycarpentry.org/lc-shell/03-working-with-files-and-folders/index.html
https://librarycarpentry.org/lc-shell/05-counting-mining/index.html

- Identify the learning objective verb. How specifically does this verb describe the desired learner outcome?
- Where does this verb fit on Bloom's taxonomy? Do you think this is an appropriate level for your learners? is it this one? https://tips.uark.edu/using-blooms-taxonomy/
- In your opinion, does the lesson do an effective job of meeting the stated objective?
- What would the next level on Bloom's taxonomy look like for your learners? How might you be able to help them think ahead to the next level without attempting to get them there during your workshop?

Using Formative Assessments

Where are your checkpoints? (10 min)

Have a look at your lesson again. Choose a learning objective, and identify where in the lesson that objective should reasonably be achieved. How will you know that that objective has been met for all learners? Will this be clear to them?

Make a plan for where in your lesson you will use different types of formative assessment to help everyone in the room monitor their progress. Keep in mind that formative assessment can can take many forms, including multiple choice questions, faded examples, spontaneous questions and calls for sticky notes.

Write some notes or thoughts about this process below for discussion.

Feedback on Your Challenges (Optional, 15 min)
With these goals in mind, pair up with a partner to discuss the MCQ and faded example problems that you wrote yesterday. Give each other specific, actionable feedback that follows our 2x2 framework. Use that feedback to make at least one modification to your exercise(s). Discuss in the Etherpad the change you made and how it will help you get more useful information about your learners.

Key Points

- To teach effectively, you have to know *who* you are teaching.
- Good learning objectives communicate the intended effect of a lesson on its learners.
- A good exercise provides useful guidance to instructors about next steps needed in teaching.

XIII. More Practice Live Coding

Round Two (45 min)
First, have a look at the rubric https://carpentries.github.io/instructor-training/demos_rubric/ that is given to trainers as a suggested framework for evaluating the online teaching demonstration sessions that are part of instructor checkout. Does this rubric make sense? Take a moment to think about things you'd like to do differently with your next live coding practice. This is also a good time to ask questions about teaching demonstration.

Next, get back into the same groups you did your live coding with. Take turns re-teaching your chosen live coding session, making sure to incorporate changes based on the feedback you received and any new ideas based on reading the rubric. Give feedback to each other using the rubric this time.

When you are finished, add some thoughts on this process to the Etherpad: 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?

Decide on beforehand where to stop and ask if the audience is keeping up
If I was doing it again, I would how/talk through alternative ways of doing things where relevant, particularly when repeating commands.

I performed much better and learned from my mistakes :)

Key Points

- (Reflective) Practice makes perfect.

XIV. Managing a Diverse Classroom

What Are the Challenges? (5 min)

What are some of the challenges you might expect when teaching learners with a broad range of expertise? Discuss with a partner and put your thoughts in the Etherpad.

Code of Conduct Violations

Never Teach Alone: How to Be a Co-Instructor

Teaching Together - Nuts and Bolts

With a partner, imagine that you are planning a workshop together and answer the following questions:

- How would you prepare to teach a workshop together?
- During the workshop, what are some things the assisting instructor can do (or shouldn't do!) to support the main instructor?

As an entire group, discuss what you came up with and then compare to the recommendations below.

Minute Cards Revisited (5 min)

Use your sticky notes to write minute cards as discussed yesterday.

Key Points

- Working with a broad range of learners can be challenging, but there are many ways to keep a classroom happy and motivated.
- Response to a Code-of-Conduct violation at a workshop is subject to instructor discretion, but all violations should be reported to the Carpentries for follow-up.

XV. Checkout Process

1. Make a contribution to a lesson's content, exercises, or instructor notes by doing **one** of the following:
    1. Submit a change (i.e. pull request) to fix an existing issue.
    2. Proof-read a lesson and add a new issue describing something to be improved.
    3. Provide substantive feedback on an existing issue or pull request.
2. Take part in a community discussion with experienced instructors.
3. Prepare to teach a full Carpentries lesson (i.e. the content of one lesson repository). Then perform a 5-minute live coding demo for that lesson starting at a point chosen by the session lead.

Application Form
https://amy.carpentries.org/forms/request_training/
Instructor Checkout

Checking Out Review with Questions & Answers (5 min)
In small groups, read and discuss one of the three checkout procedures. Make notes in the etherpad and when you're done, report back to the full group about the requirements for that stage of the process. What questions do you still have about the checkout process?

3 How to demonstrate your teaching skills remotely? Skype? And should it be in a class-like setting?
Do we get information when these zoom meetings/discussions take place?
Are the discussions (zoom meetings) archived?
How do I get to know people in my area who are doing carpentries? - > after Lunch: regional contact points help
Can yout tell something about the Github api?

Schedule a Discussion or Demo (5 min)
Visit the discussion Etherpad to sign up for a session. If the session you would like to attend is full, contact the discussion host and co-host to ask if you can attend.
https://pad.carpentries.org/community-discussions

If you'd prefer to do your teaching demonstration before your discussion, visit the demo Etherpad and sign up there.

Suggested lessons for demos and good starting points:
https://carpentries.github.io/instructor-training/demo_lessons/index.html

Demo Etherpad:
https://pad.carpentries.org/teaching-demos-recovered does not work, this one does:
https://pad.carpentries.org/teaching-demos-new

Lesson Contribution

After you make your contribution, email checkout@carpentries.org with the link to your contribution.

How-to: https://github.com/dmgt/swc_github_flow/blob/master/for_novice_contributors.md

What's in a Badge?

Check Out the Discussion (Optional)
As an instructor, your voice is important! We want you to be actively involved in discussions about the lesson materials (and other aspects of the Carpentries community). Go to the GitHub page for the lesson you worked with over the past two days and click on the "Issues" tab. Read through some of the discussions and, if you have anything to add, please add it to the conversation! If you wish to make a pull request, be sure to examine the contribution guidelines for the repository you are working in. If you do make a significant contribution to the discussion, send a link to the issue to checkout@carpentries.org.

Congratulations! You've just completed one of the three remaining steps in becoming a Carpentries instructor.

Key Points

- To certify, you must contribute to a lesson, take part in a discussion, and do a teaching demo within 90 days of your training event.

XVI. The Carpentries: How We Operate

Brief History

Similarities and Differences Between The Carpentries Lesson Programs

https://github.com/carpentries/workshop-template

The Carpentry Community

Participating in the Carpentries: What's Your Role?
If you are at an in-person training, your instructor will hand out paper copies of a worksheet. If you are at an online training, you can get a digital copy at
https://carpentries.github.io/instructor-training/files/handouts/Carpentries_roles_worksheet_v4.pdf.

Take a moment to review member community roles on the Carpentries' communitiy website (http://static.carpetwntries.org/community/). Working on your own, match up the roles with the descriptions. When you are done, think about the question at the bottom of the worksheet about what roles you might play, and enter your thoughts in the etherpad.

I can be an instructor and a lesson developer. I already contributed to lesson development through recent sprints (Top 10 FAIR Things and Library Carpentry-Mozilla sprint) and would like to take a more active role.

Annual report from 2018 https://carpentries.org/files/assessment/TheCarpentries2018AnnualReport.pdf

Get Connected (3 min)
Take a couple of minutes to sign up for the Carpentries discussion channels you want to stay involved with.

There are many ways to get connected with the Carpentries community:

- Our websites are:
    - Software Carpentry https://software-carpentry.org
        - Blog https://software-carpentry.org/blog/
    - Data Carpentry http://www.datacarpentry.org
        - Blog http://www.datacarpentry.org/blog/
    - Library Carpentry https://librarycarpentry.org

- Blog https://librarycarpentry.org/blog/
  - The Carpentries http://carpentries.org/
    - Blog http://carpentries.org/blog
    - Get involved (community overview) https://carpentries.org/community/
- Our lessons are hosted on GitHub; contributions to them and discussion of changes happens via GitHub pull requests and issues, and the lessons are published using GitHub Pages. More details are given below:
  - Data Carpentry on GitHub https://github.com/datacarpentry
  - Software Carpentry on GitHub https://github.com/swcarpentry
  - Library Carpentry on GitHub https://github.com/LibraryCarpentry
- The Carpentries share public discussion lists that host everything from lively discussion on teaching practices to job postings and general announcements:
  - https://carpentries.topicbox.com
- We publish a joint newsletter. https://carpentries.org/newsletter/
- Host monthly community calls and weekly instructor discussion sessions:
  - Check out our community calendar https://carpentries.org/community/#community-events
- You can also find us on
  - Twitter:
    - Software Carpentry on Twitter https://twitter.com/swcarpentry
    - Data Carpentry on Twitter https://twitter.com/datacarpentry
    - Library Carpentry on Twitter https://twitter.com/LibCarpentry
    - Carpentries on Twitter https://twitter.com/thecarpentries
  - Slack https://swc-slack-invite.herokuapp.com
  - Gitter https://gitter.im/LibraryCarpentry/Lobby (Library Carpentry)
  - Facebook https://www.facebook.com/carpentries/

Etherpads: The Pad of Pads https://pad.carpentries.org/pad-of-pads

How a Workshop Works

- Materials
- Using the Names and Logos
- What is the Core Curriculum?
- Who Can Teach What
- Setting Up

Practice With Carpentries Infrastructure (25 min)
Go to the workshop template repository (https://github.com/carpentries/workshop-template) and follow the directions to create a workshop website using your local location and today's date. Put the link for your workshop website below.

When you are done the url to your webpage can be found under settings-> GitHub Pages

Note: Sometimes web browsers will cache the workshop webpage, so when you make changes in Github, they don't show up on the workshop webpage immediately. Two ways to avoid this are to use a "private" or "incognito" mode in your web browser or by following the instructions at https://en.wikipedia.org/wiki/Wikipedia:Bypass_your_cache to bypass your browser cache.

Question and Answer (10 min)

What questions do you have about running and teaching at a workshop? Talk with a partner and enter your questions below. At this time we will also return to discuss questions remaining from the beginning of the day.

A Culture of Contribution

Key Points

- Carpentry materials are all openly licensed, but Software and Data Carpentry names and logos are trademarked.
- Carpentry workshops must cover core concepts, have at least one certified instructor, use our pre- and post-workshop surveys, and report attendance information.

XVII. Workshop Introductions

Setting the Workshop Environment

Your Academic Past (5 min)

Think back to courses or workshops you really liked or didn't like.

- How did those courses start on the first day?
- Were you confident in the instructors abilities?
- Did you feel like they were enthusiastic about the course and invested in you?
- Was it clear what you were going to be learning?
- Were you excited about the material?
- Did you leave that first day thinking the instructor was uninterested, that you weren't the students they wanted to be teaching or you had no idea what the course was supposed to be about?

What's in an Introduction? (10 min)

Get into small groups (3-4 people) and discuss the questions below for 5 minutes. Take notes on your answers.

- 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 5 minutes, come together, and combine ideas as a large group.
Compare your ideas with the list of topics below.

- Did you miss anything?
- Did you come up with something that's not listed below?

Optional question: what did you (the leader) do or not do in your introduction to the session?

Goals For the Introduction

Components of the Introduction

Practice Your Introduction (15-25 min)
Imagine you have completed instructor training and you are about to teach a full lesson around the material you have been practicing teaching today.

1. Write out some notes, covering some of the topics described above:
    1. Introduce yourself effectively
    2. Clarify learning objectives and expectations
    3. Set the tone for the workshop
2. Return to your groups of 2 or 3 and each give 2 minutes of your introduction.
3. After each introduction, provide 2-3 minutes of feedback.

Key Points

- A planned introduction is a helpful tool in setting the workshop environment.
- Introductions should include both practical information and start building relationships.

XVIII. Putting It Together

Picking up the Pieces (optional)
In small groups or on your own, make a list of all the concepts you've encountered in this training. Your list can include everything from educational/teaching theories to specific in-classroom practices.

Organize Your Knowledge
Let's put the pieces together by creating a visual organization of information.
We suggest doing this in two ways:

1. If you are comfortable with / like concept maps, trying integrating all the topics above into a single concept map.
2. Use the provided handout to organize topics. Here are two examples:

    - Handout One (https://carpentries.github.io/instructor-training/files/handouts/Wrap-Up-doc.pdf, with example content:
      https://carpentries.github.io/instructor-training/files/handouts/Wrap-Up-doc-example.pdf
    - Handout Two (
      https://carpentries.github.io/instructor-training/files/handouts/Carpentries_teaching_practices.pdf)

Work on this on your own. There's no "right answer" – this is about you building up a mental model, moving from "novice" to "competent practitioner".

Once you've organized your thoughts, move to the next exercise.

Parting Thoughts
If you didn't think about these issues when organizing your topics in the previous exercise, now consider:

- What is your mental model of teaching?
- Can you identify why each topic above applies to teaching for the Carpentries?

Key Points

- Having a plan makes it easier for you to remember to implement the important teaching practices you've learned.

XIX. Wrapping Up

One Up, One Down (5 min)
Provide one up, one down feedback on the entire two-day course.
Just as in our regular workshops, we collect post-instructor-training-workshop feedback. Your participation will help us evaluate the efficacy of this training and improve the content and delivery of the lesson materials.

Minute Cards (5 min)
In addition to giving one up, one down feedback. Please also fill out your sticky notes to give your instructors anonymous feedback.

Post Workshop Surveys (5 min)
Assessment is very important to us! Please complete this five-minute post-workshop survey. (https://www.surveymonkey.com/r/post-instructor-training)

Key Points

- Feedback applies to all kinds of learning, including learning how to teach.