

Carpentries Instructor Training

8 & 9 October 2018



Welcome



Etherpad

<https://pad.carpentries.org/2018-10-08-ttt-EMBL>

Please review the Code of Conduct

How Learning Works: The Importance of Practice



The Acquisition of Skills



The importance of going slowly

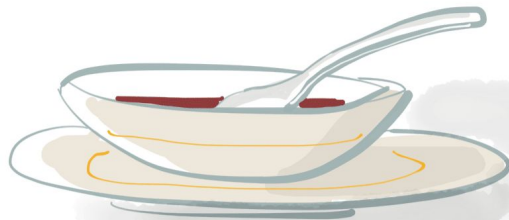
“If someone feels it’s too slow, they’ll be a bit bored.
If they feel too fast, they’ll never come back to programming.”

(Kunal Marwaha, SWC Instructor)

FORMATIVE SUMMATIVE



WHEN THE **CHEF**
TASTES THE SOUP



WHEN THE **GUESTS**
TASTE THE SOUP

@bryanMathers

FROM STEVE WHEELER'S BLOG "THE AFL TRUTH ABOUT ASSESSMENT"



Formative Assessment Comes in Many Forms

Q: what is $27 + 15$?

a) 42

b) 32

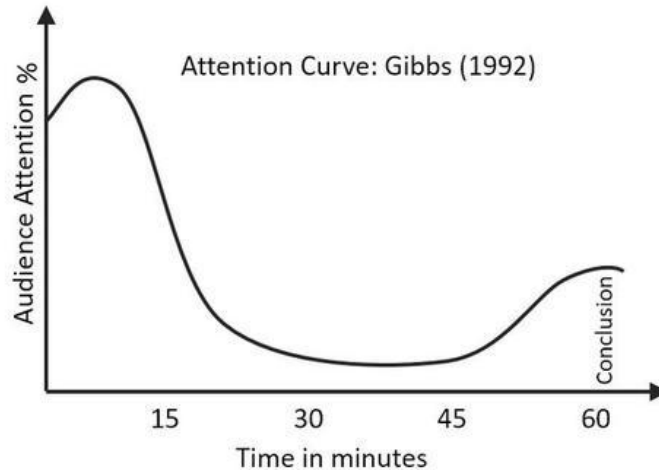
c) 312

d) 33

The correct answer is 42, but each of the other answers provides valuable insights

Formative Assessment Should be Frequent

- Ideally every 5 min
- At least every 10-15 min
- Attention span: 10-15 min
- Break up instructional time and refocus attention



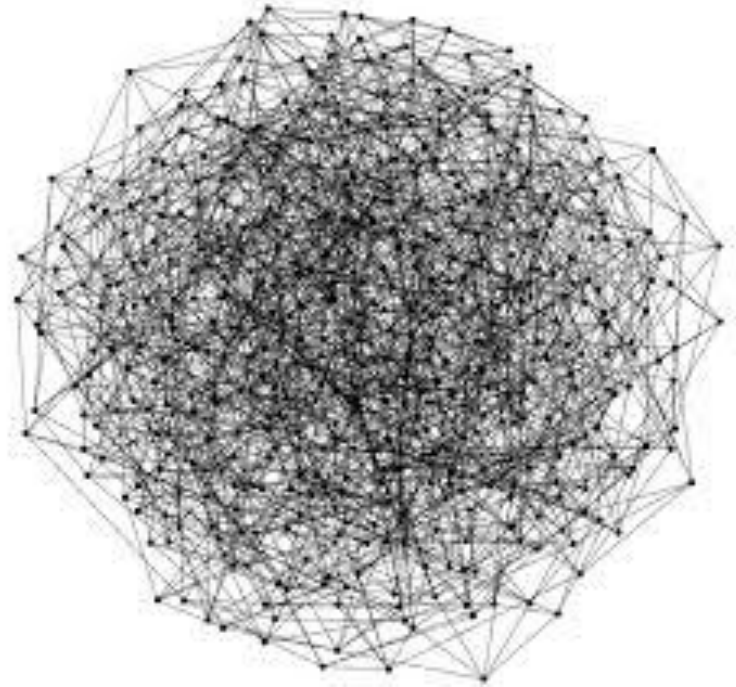
How Learning Works: Expertise and Instruction



What makes an expert?

- Novices
 - Lack a mental model or have incomplete model
- Competent practitioners
 - Have mental models that work well enough for most situations
- Expert
 - How are experts different from both these groups?

What is an expert?



The more connections a fact has to other facts, the more likely the fact is to be remembered

Coffee Break



How Learning Works: Working Memory and Cognitive Load



Strategies for Memory Management

How many characters can you remember?

XDN

AFB

ICI

ACN

NX

Strategies for Memory Management

How many characters can you remember?

X

DNA

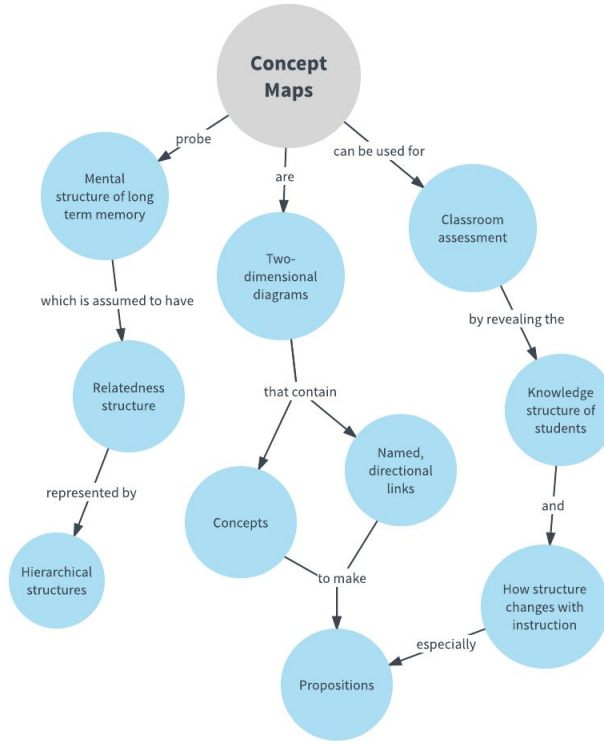
FBI

CIA

CNN

X

Concept Maps as Instructional Planning Tools



A concept map is a picture of someone's mental model of a domain

Concept Maps

```
for ch in "abc":  
    print(2*ch)
```

```
for ch in "abc":  
    print(2*ch)
```

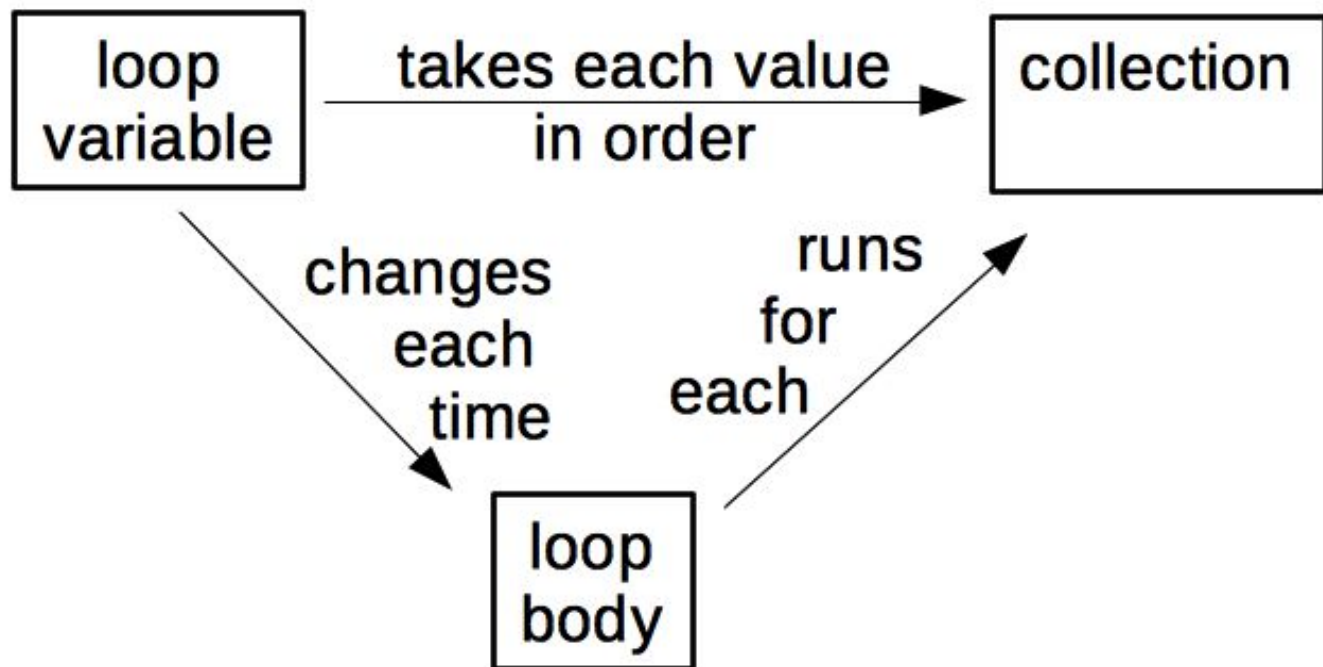
loop
variable

collection

loop
body

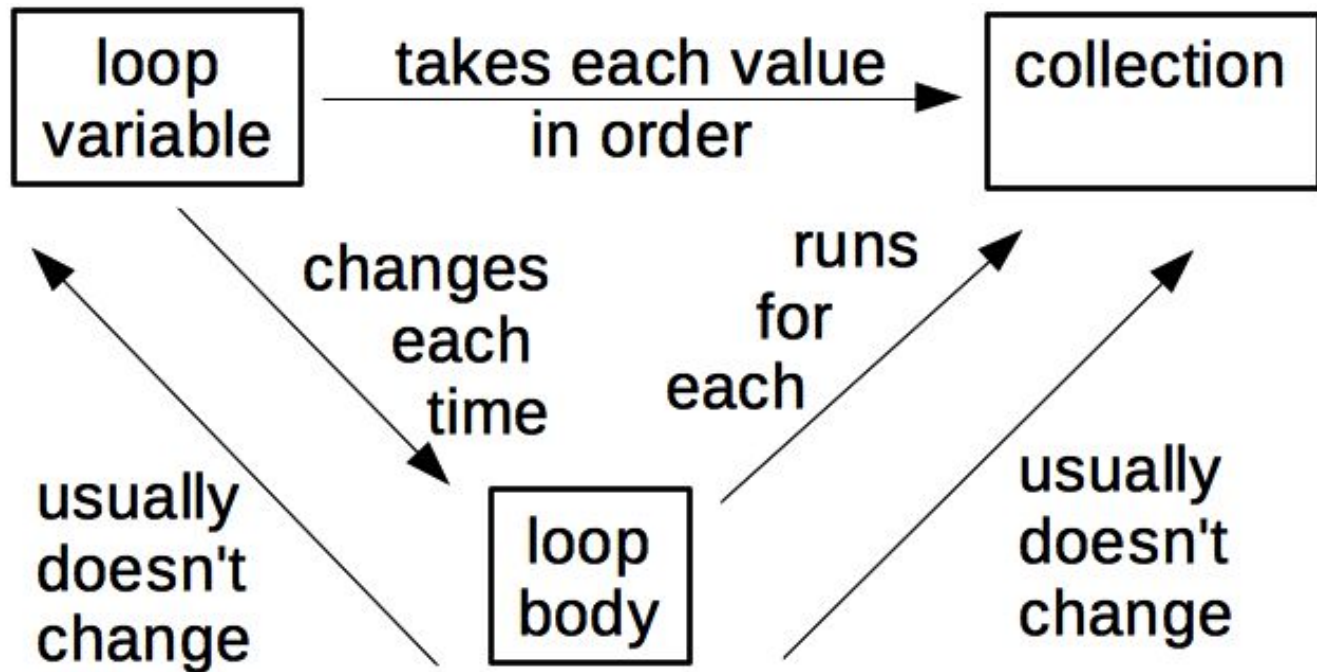
Three things

```
for ch in "abc":  
    print(2*ch)
```



Six things

```
for ch in "abc":  
    print(2*ch)
```

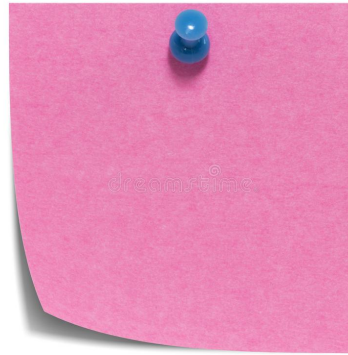


Building Teaching Skill: Getting Feedback



Getting Feedback

- Surveys
- Minute Cards
- One-Up, One-Down



Give Us Feedback

