



# Motivation and Demotivation

# Motivation – The Paradox

People learn best when they care about a topic  
and think they can master it

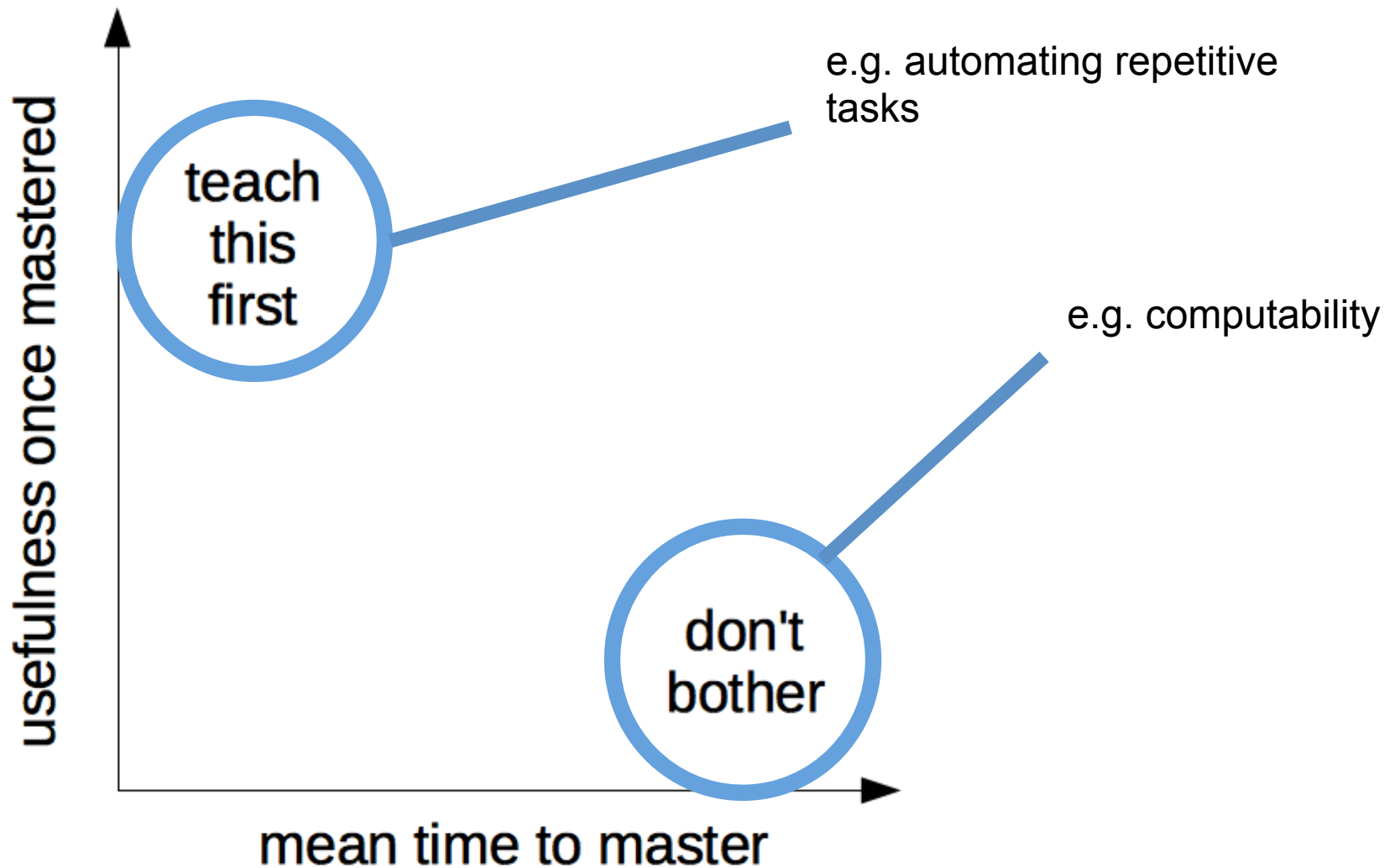
***VS.***

Most scientists just want to do science:

*Programming seen as a tax*

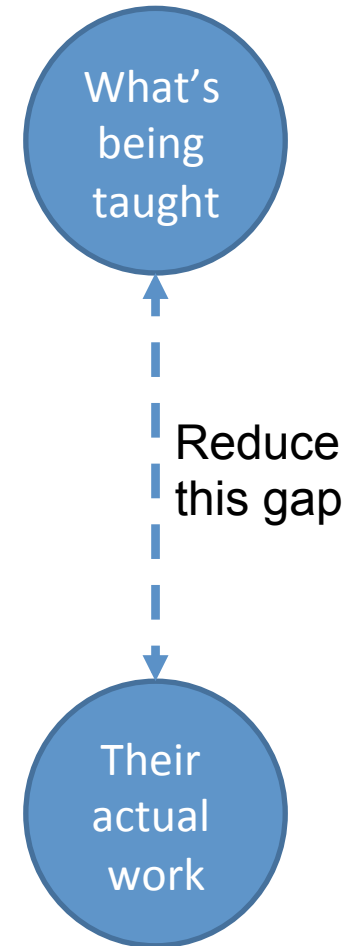
*Early programming experiences often demoralising*

# So... What to Teach?



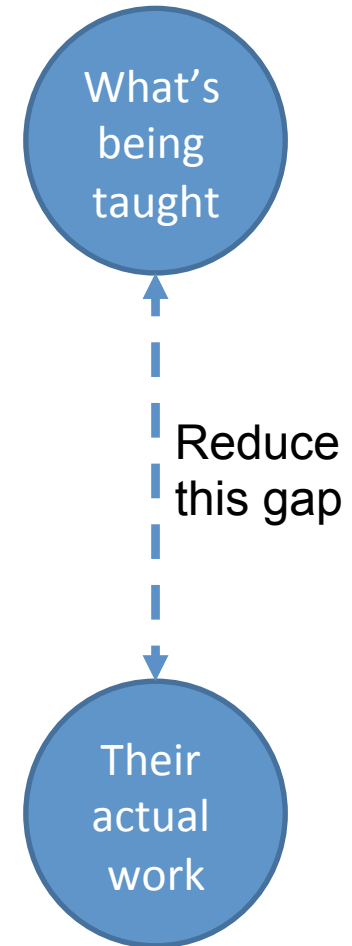
# “Teach most immediately useful first”

- Learners do something useful in *first 15 minutes* of lesson
  - “I can learn this stuff”
  - “This will allow me to do science faster”



# Think about Authentic, Tangible Tasks

- *e.g. media computation* approach
  - Guzdial and Ericson, Georgia Tech
  - Learning a new language, e.g. Python
  - First program opens image, resizes it, and saves it
  - *An authentic task that is tangible*



# Exercise

**Choose** something you've done that uses one or more of the skills we teach

- e.g. wrote a function, bulk did some stats in R, forked a repo

**Think** how you would use it (maybe simplified) as an exercise or example in class

**Pair** up with your neighbor and decide where this exercise fits on a 2x2 grid of “short/longtime to master” and “low/high usefulness”?

In the Etherpad, **share** the task and where it fits on the 2x2 grid

# Motivation Strategies

- Strategies to establish value
  1. Connect the material to students' interests
  2. Provide authentic, real-world tasks
  3. Show relevance to students' current academic lives
  4. Demonstrate the relevance of higher-level skills to students' future professional lives
  5. Identify and reward what you value
  6. Show your own passion and enthusiasm for the discipline

# Motivation Strategies

- Strategies to build positive expectations
  1. Ensure alignment of objectives, assessments, and instructional strategies
  2. Create assignments that provide appropriate level of challenge
  3. Articulate your expectations
  4. Provide early success opportunities
  5. Provide targeted feedback
  6. Be fair
  7. Describe effective study strategies



# Motivation Strategies

- Strategies for self-efficacy:
  1. Provide flexibility and control
  2. Give students an opportunity to reflect

# Exercise

*Think back to a 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.*

# Demotivation

- Two biggest: **indifference** and **unfairness**
- Other things you shouldn't do in a workshop:
  - Tell learners they are rubbish because they use Excel and/or Word
  - Repeatedly make digs about Windows and praise Linux
  - Criticize GUI applications (and by implication their users)
  - Dive into complex discussion with 1 or 2 people
  - Pretend to know more than you do
  - Use the J word ("just")
  - Feign surprise - saying things like "I can't believe you don't know X" or "you've never heard of Y?"

# Exercise

*Think back to a time when you demotivated a student (or when you were demotivated as a student).*

*Pair up with your neighbor and discuss what you could have done differently in the situation.*

*Share the demotivational story in the Etherpad.*

# Imposter Syndrome

- Belief that
  - "I'm not good enough!"
  - "My achievement was a fluke!"
  - "I'll be found out!"
- Ask for feedback, look for role models
- When instructing learners
  - Share stories of mistakes – things are hard
  - Make deliberate mistakes!

***"We're all faking it" – Instructor Training materials***

# Mindset

## Fixed Mindset

*Abilities mostly innate*

*Failure is lack of basic abilities*

*“I must look smart and never look stupid”*

- With a fixed mindset, everyone does worse
  - “I don’t get this first bit, I won’t be able to do this”
- Growth mindset promotes perseverance

## Growth Mindset

*Abilities can be developed*

*Requires effort, persistence*

*“Everyone can get smarter if they work at it”*

# Accessibility

- Try and ensure a good structure in place
  - **Mobility issues:** [Liz Henry blog post](#)
  - **Visually impaired:**  
[W3C Accessibility Initiative checklist](#)
  - **Hearing impaired:** [interview with Chad Taylor](#)
- WebAIM – ‘visually check’ online materials
- Ask people with disabilities in decision-making
- Do easy things first: fonts, text size, room access

*Measures taken to improve accessibility aid everyone*