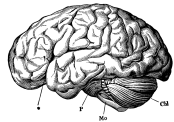**1**

How to Teach All the Things
(including Shiny and the Tidyverse)

Motivation

2

Intrinsic vs. Extrinsic

Intrinsic: doing it for my own reasons

Extrinsic: doing it for someone else's reasons

The strongest predictor of whether an adult learns something or not is whether they are motivated to do so. It's important to distinguish between two kinds of motivation: intrinsic, which comes from within, and extrinsic, which is imposed by someone else. Learning how to play the ukulele because you've always wanted to is intrinsic; doing it because music is a required class in Grade 5 and all the other instruments were already taken is not.

There are three primary motivators for adult learning.

3

+ Self-Efficacy

"Am I in control of my own life?"

First and most importantly, adults want to be in control of their own lives – they don't like to jump through hoops. Self-efficacy is the driving force behind self-paced online training: it allows people (well, those privileged enough to have free time) to learn what they want and when they want.

| | 4 | Utility is the second big motivator for adults. Is this useful? Will it help me meet **my** goals? (It's important to note that there are many kinds of utility, just as people have many different kinds of goals – learning the ukulele probably won't help you find a job, but that's not why you're doing it.) |

+ Utility

"Will this help me meet my goals?"

| | 5 | The third motivator is community. People like to do what their friends, neighbors, and colleagues are doing, and they like to do things together – this is why the best predictor of whether someone actually uses a gym membership is whether or not someone they know is going with them. |

+ Community

"Are people I know learning this with me?"

| | 6 | Now let's look at demotivators. The most important is unpredictability: if taking actions works some of the time, but not other times, people give up trying because there's no point. This is called **learned helplessness**. |

- Unpredictability

"What I do doesn't seem to affect what happens."

7

- Unfairness

"The teacher has favorites."

A second big demotivator is unfairness. Studies have shown that if people believe the game is rigged, everyone will do less well – even those that the game is rigged in favor of.

8

- Indifference

"Nobody cares."

The third of our demotivators is indifference – the feeling that nobody cares if you succeed or not. It's easy for students to feel this way in large classes or when learning online, but it's also easy for instructors to give this impression even when they're teaching one-to-one.

9

In the Classroom

1. Working in pairs, make a short list of things that can happen accidentally in a programming class to demotivate learners.
2. Present one of your ideas to the whole class.

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Disparate Starting Points

"One third are bored and one third are lost"

Pre-assessment can demotivate those who most need help

False beginners

As free-range educators, we often have learners who are at very different levels (more so than in classroom settings where students are moving in lock step). It's tempting to stream people, but pre-assessment questionnaires can easily demotivate people who already feel insecure about their lack of knowledge. They are also misleading because of "false beginners": people who have learned material before, but apparently forgotten it. They will progress much more quickly once the lesson starts.

A Sorting Hat

1. Working in small groups, discuss techniques you can use to cope with a wide variety of learner levels when teaching.
2. Have one of your group present your favorite ideas to the class.

1. Working in pairs, make a short list of things that can happen accidentally in a programming class to demotivate learners.
2. Present one of your ideas to the whole class.