



On teaching adults to code

Kristin Bott
Posit, PBC

posit
conf (2025)



Photo : Marco Bianchetti on Unsplash

How do you teach adults **new tricks?**

Kristin Bott
Posit, PBC

posit
conf (2025)



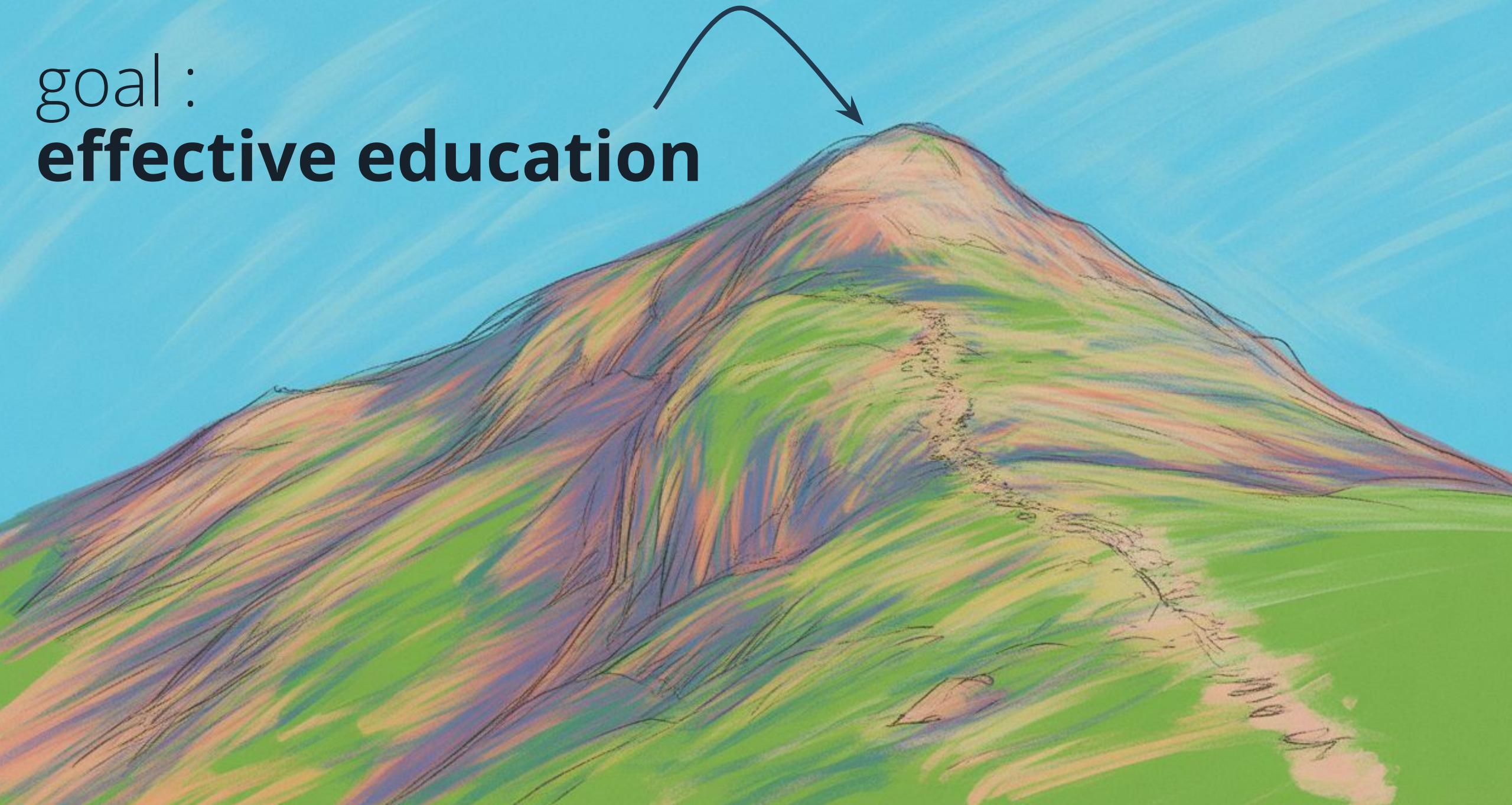
Photo : Marco Bianchetti on Unsplash

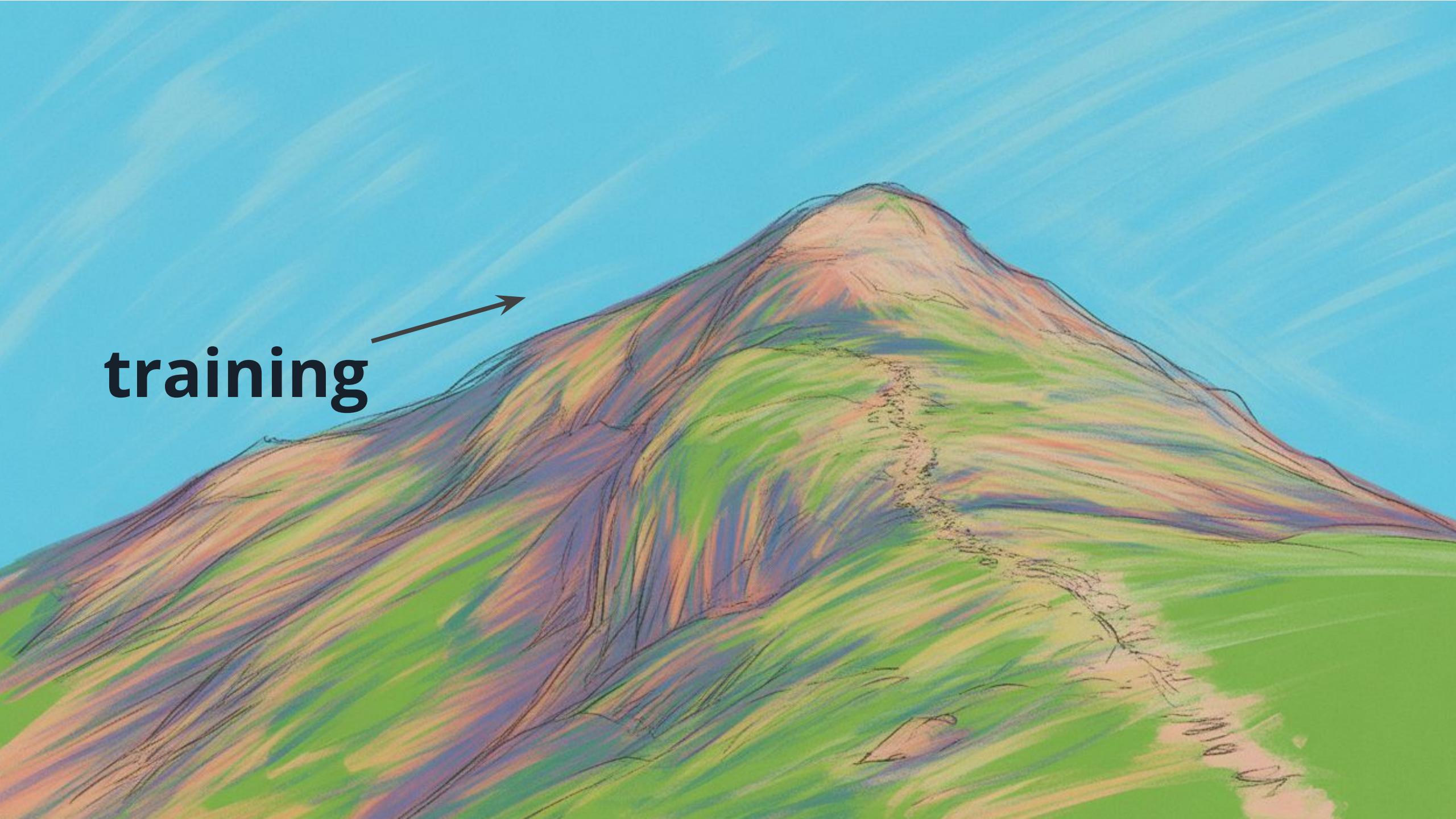
How do you teach adults **new tricks?**

Kristin Bott
Posit, PBC

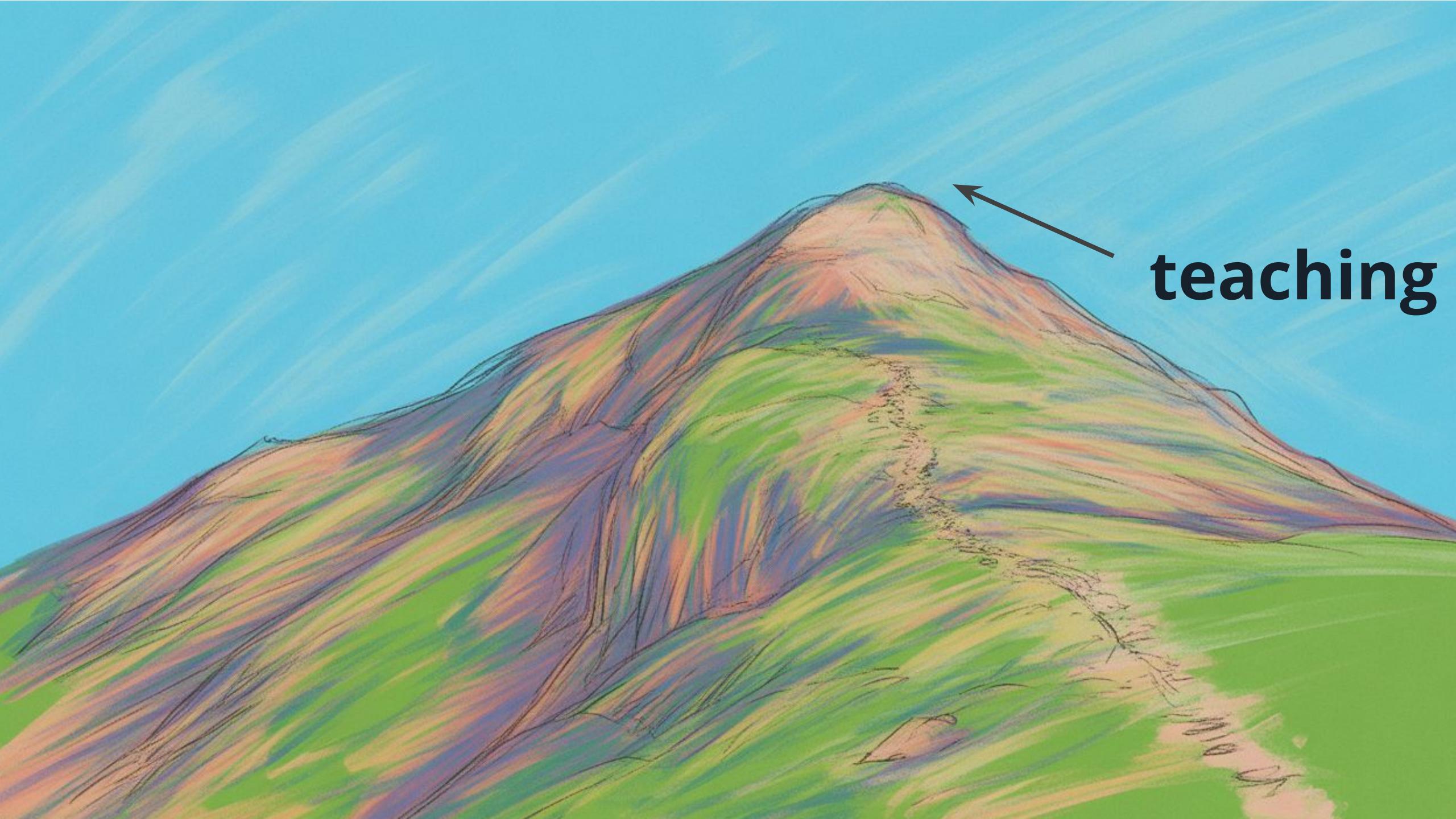
posit
conf (2025)

goal :
effective education

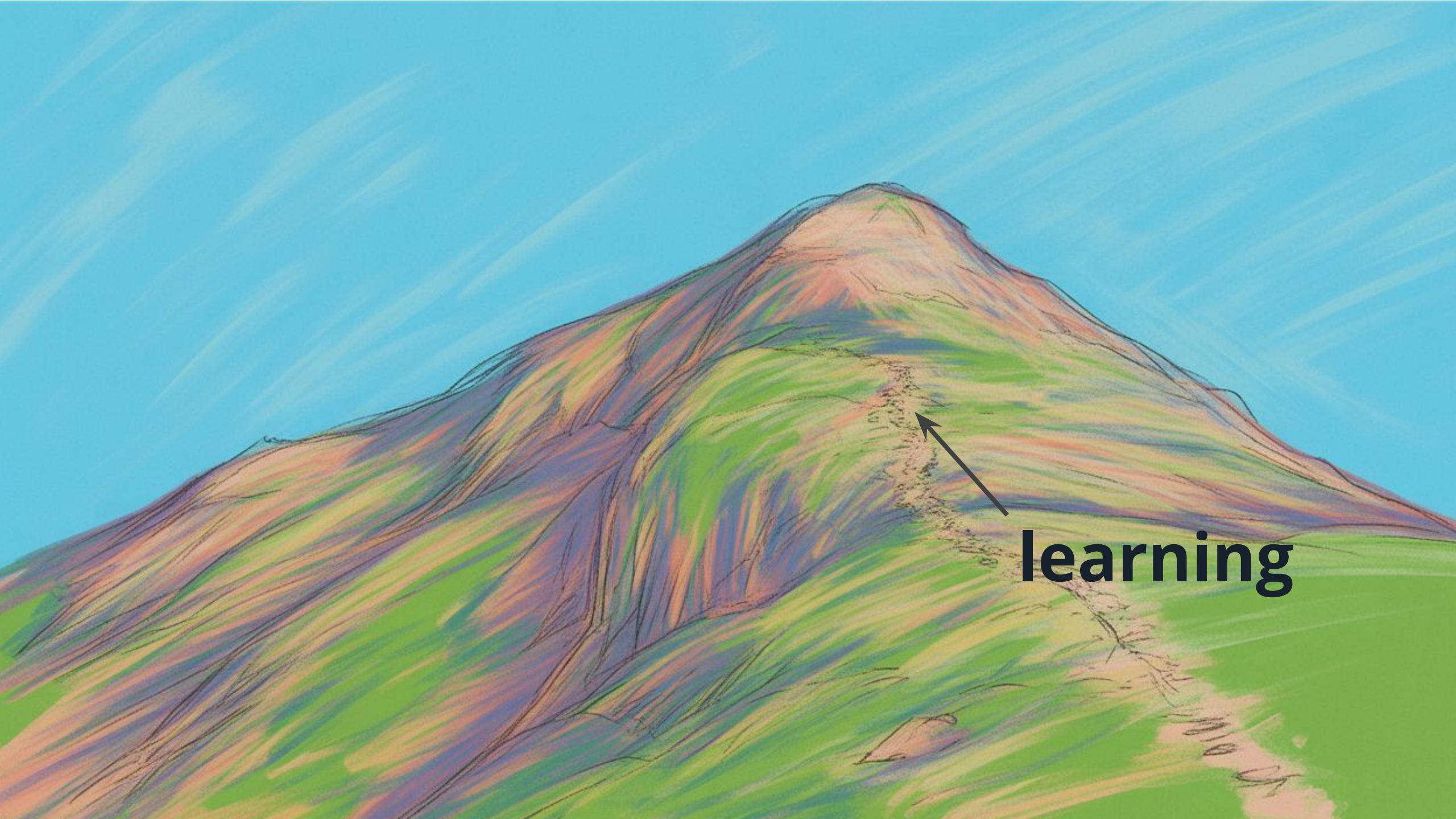




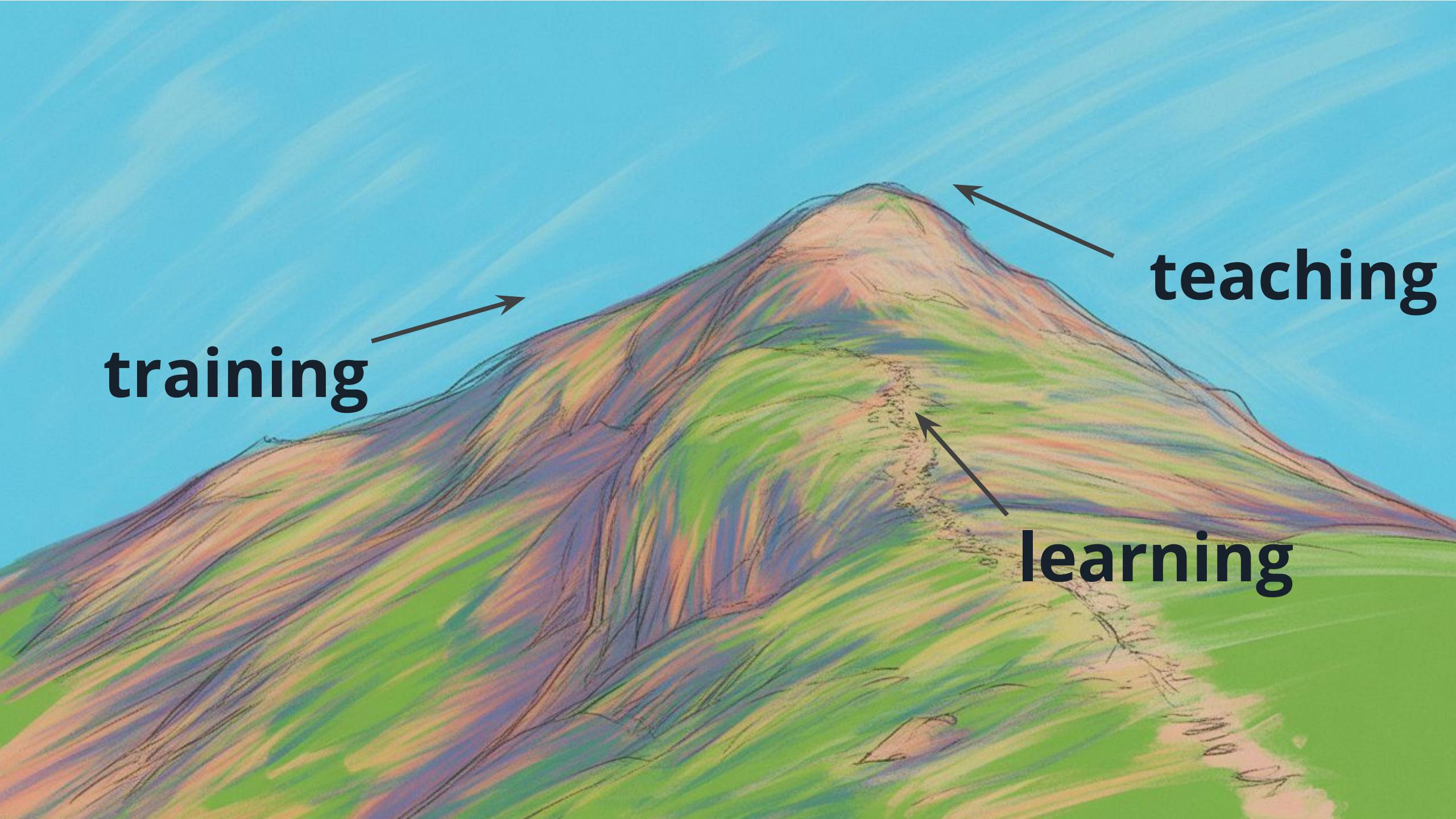
training



teaching



learning



training

teaching

learning



[aside : my path]

POSIT ACADEMY :: BY THE NUMBERS

Posit Academy

data science is not a spectator sport

courses : foundations (R, Python) + programming (R) + Shiny (R)

Posit Academy

data science is not a spectator sport

public launch in March 2022

1500+ learners across

200+ mentor-led groups across

< 100 companies

POSIT ACADEMY :: BY THE NUMBERS

Posit Academy as an example

or

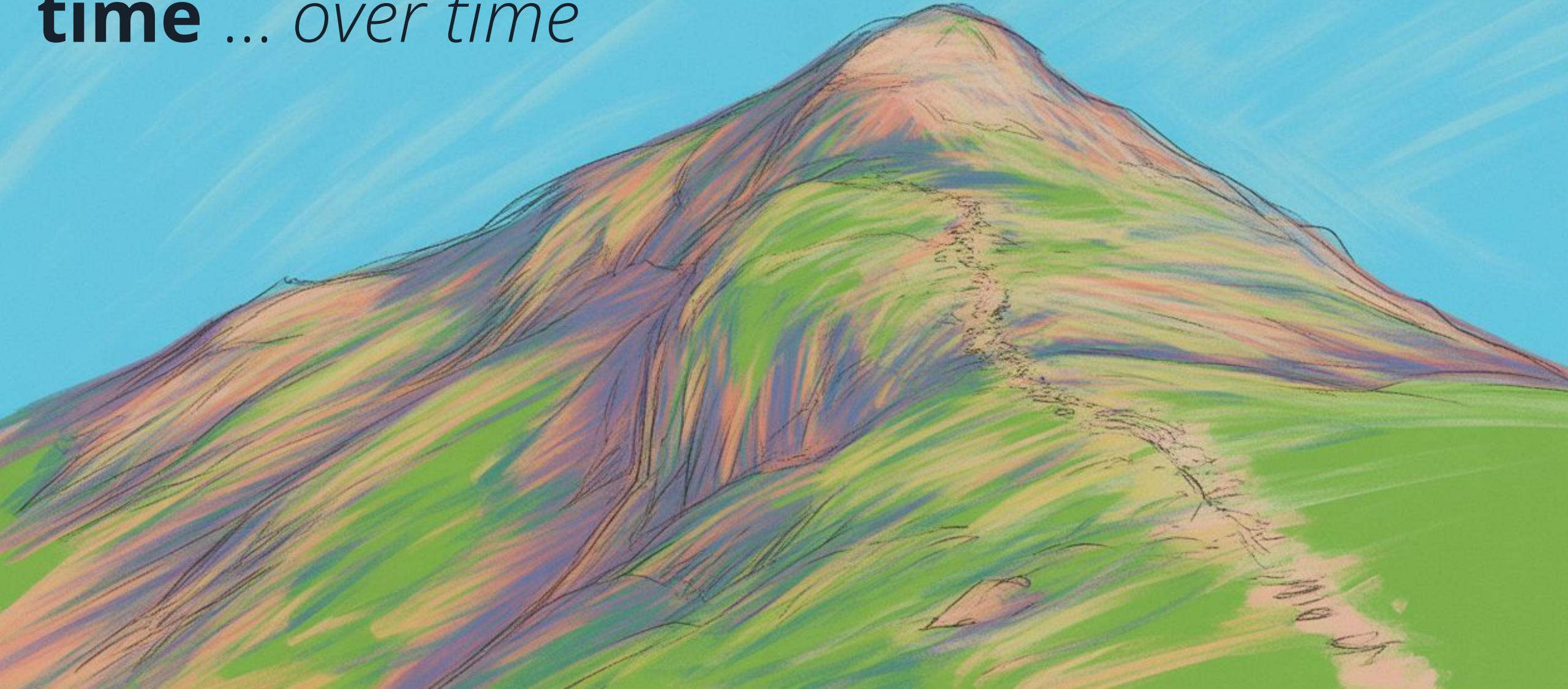
*valuable lessons learned in three+ years
of code-first, learner-focused data science education*

goal :
effective education

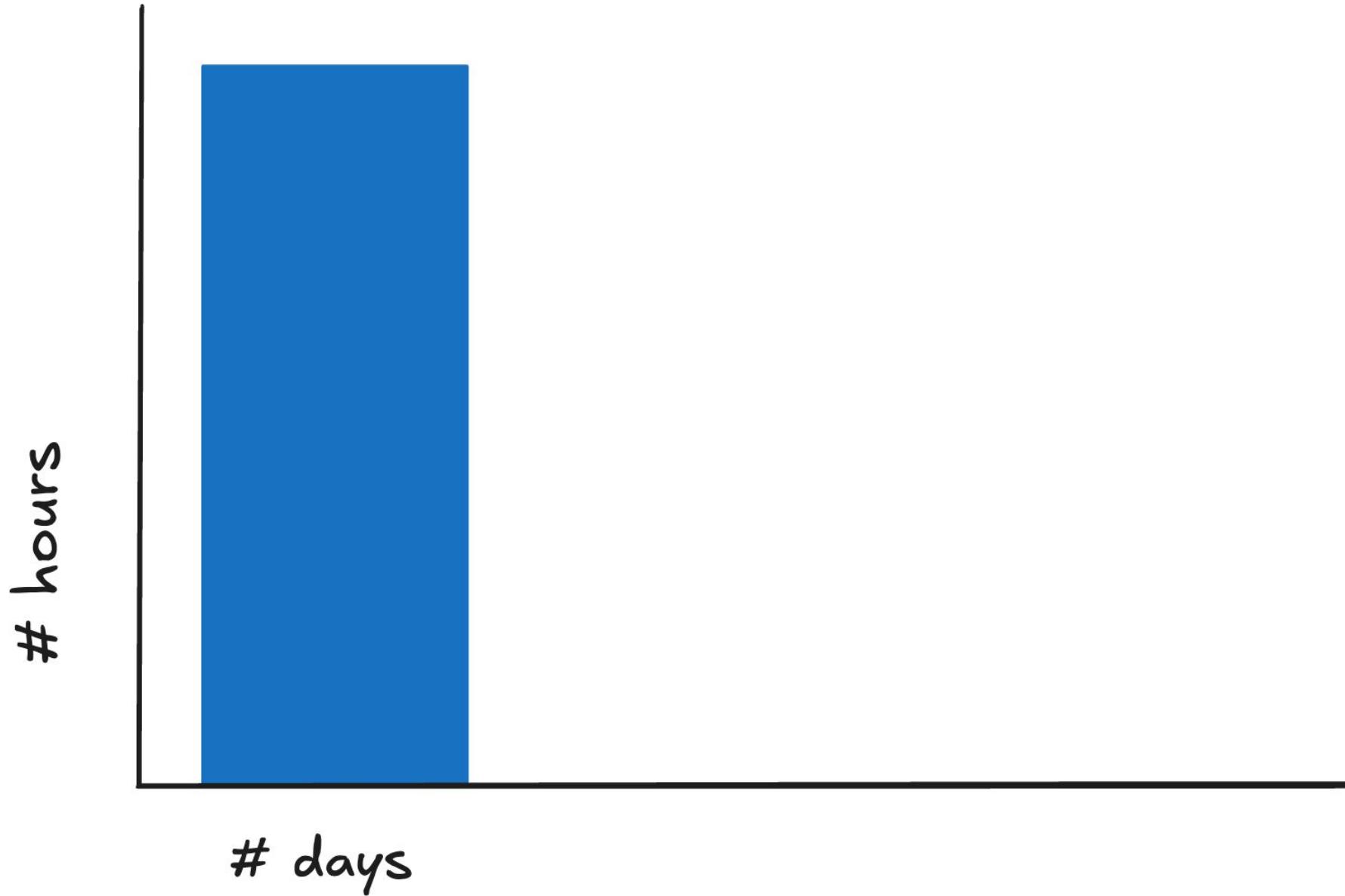


1

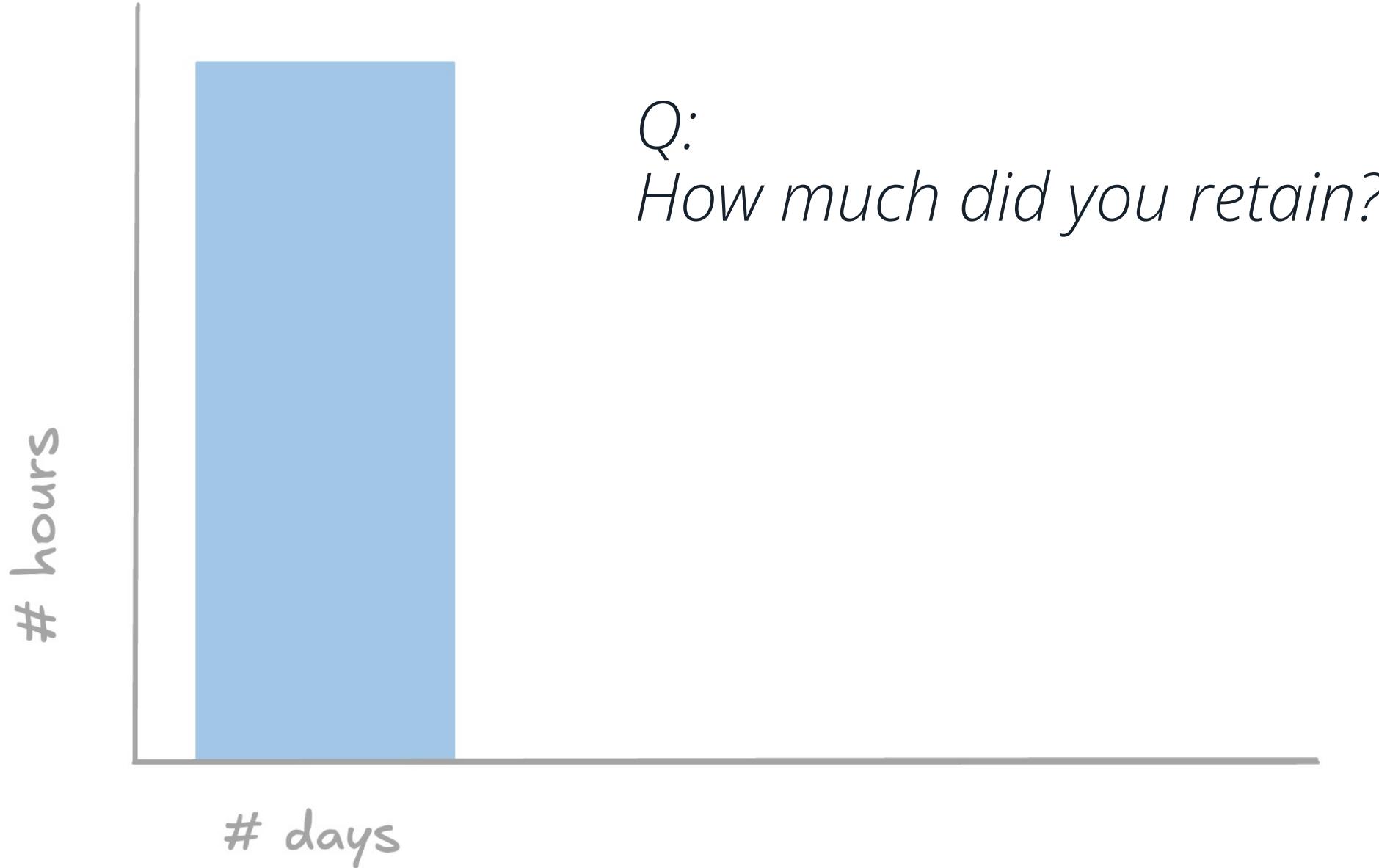
time ... over time



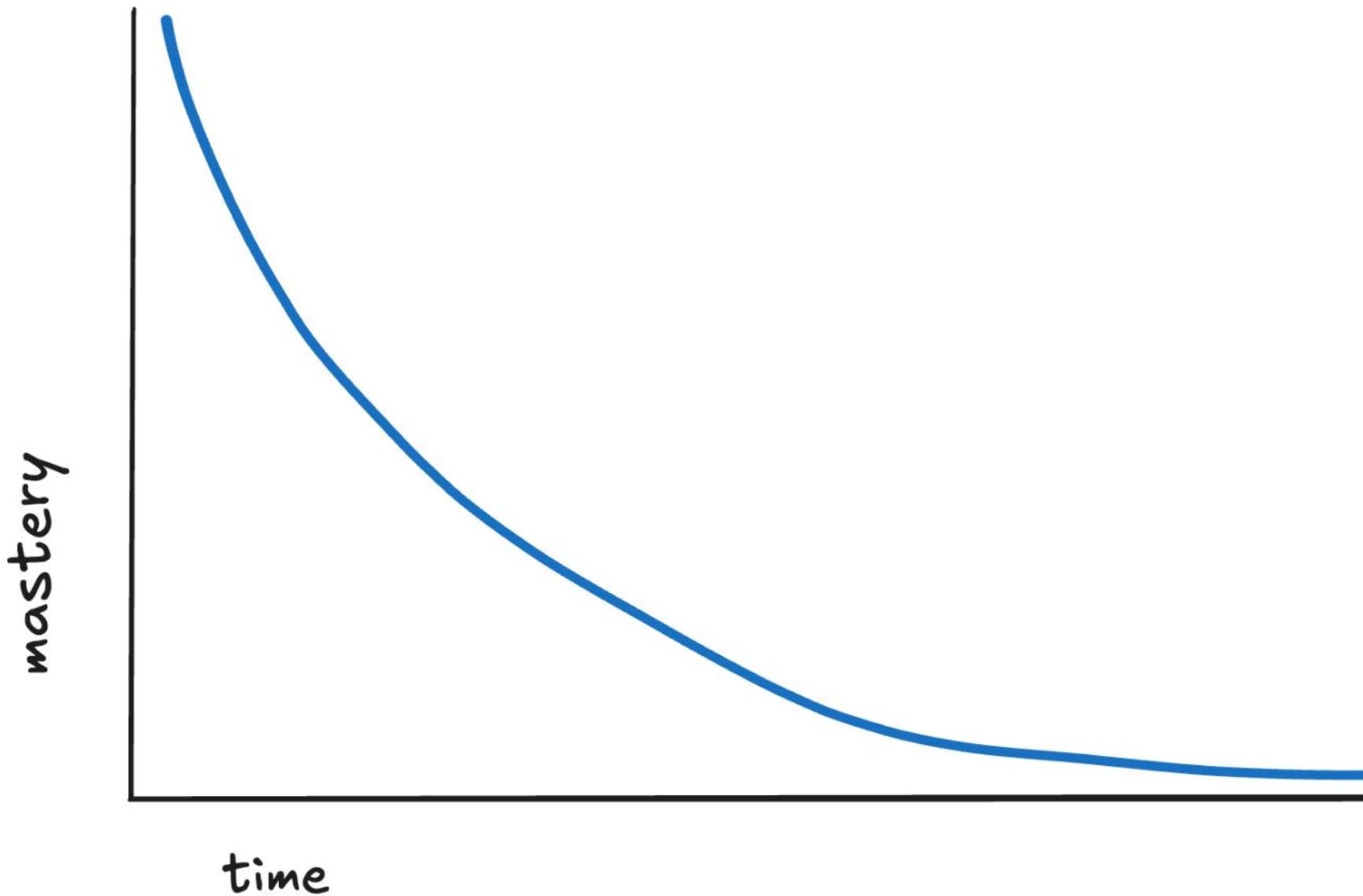
TIME ... OVER TIME



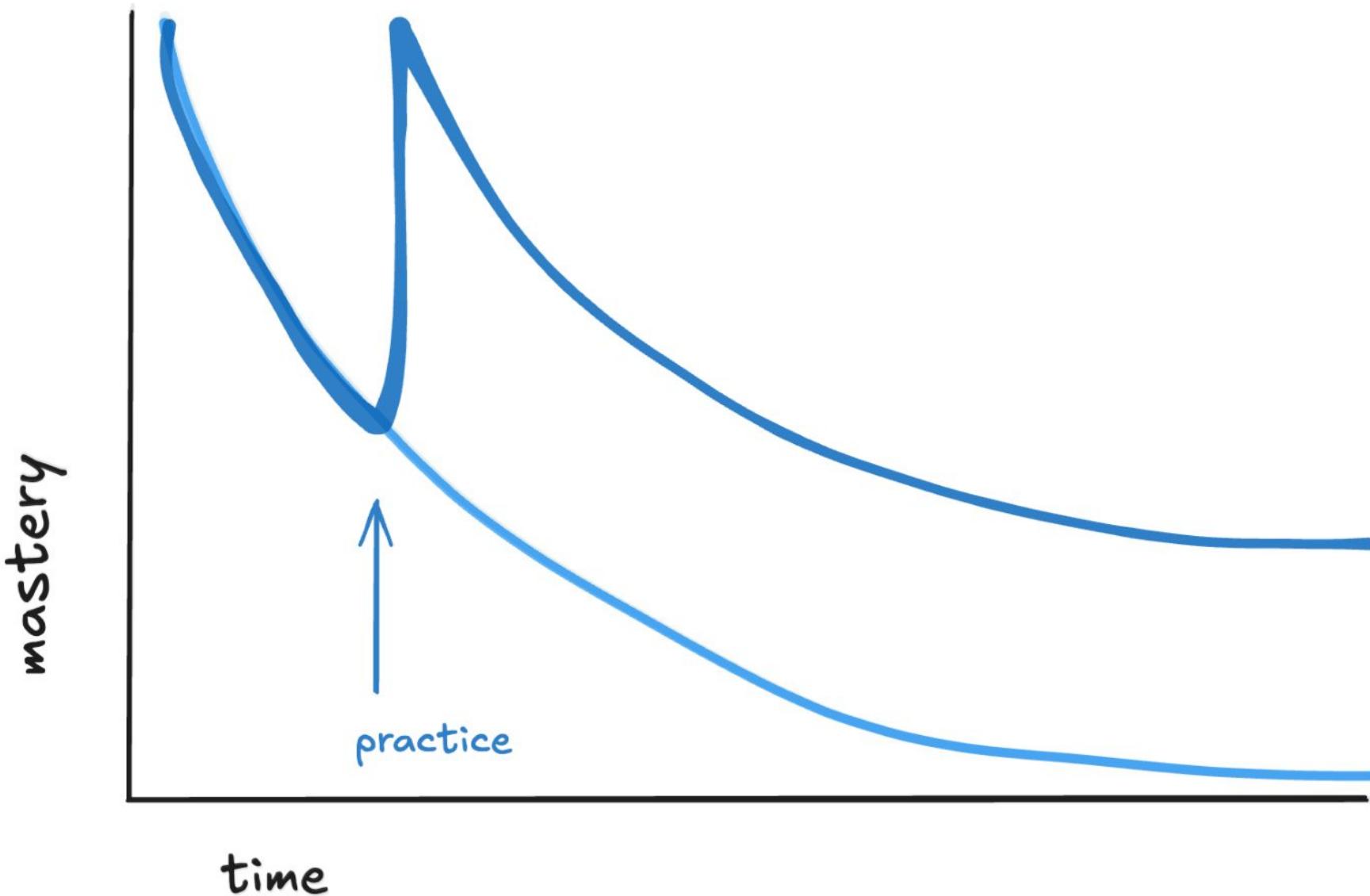
TIME ... OVER TIME



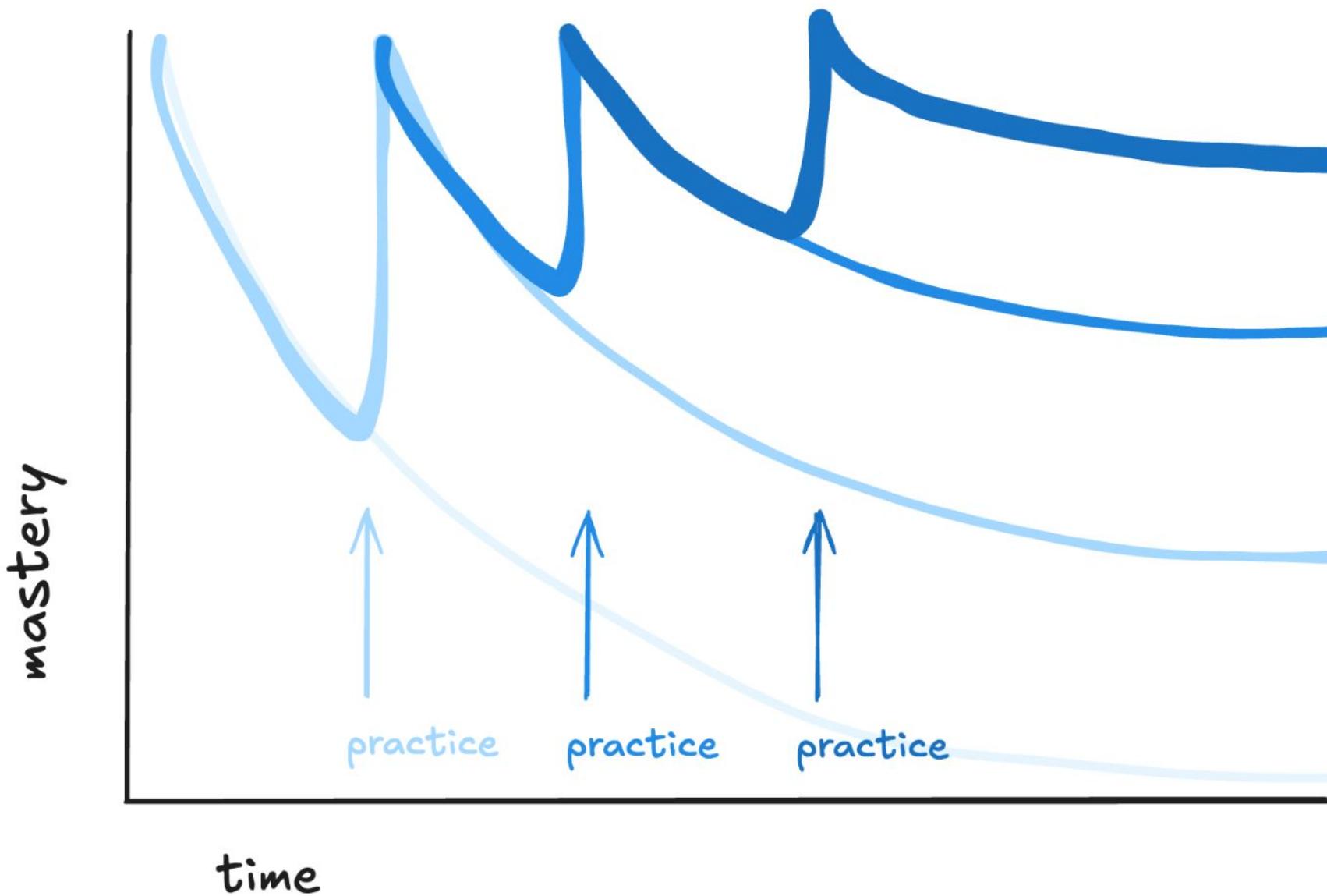
CONCEPT : FORGETTING CURVES



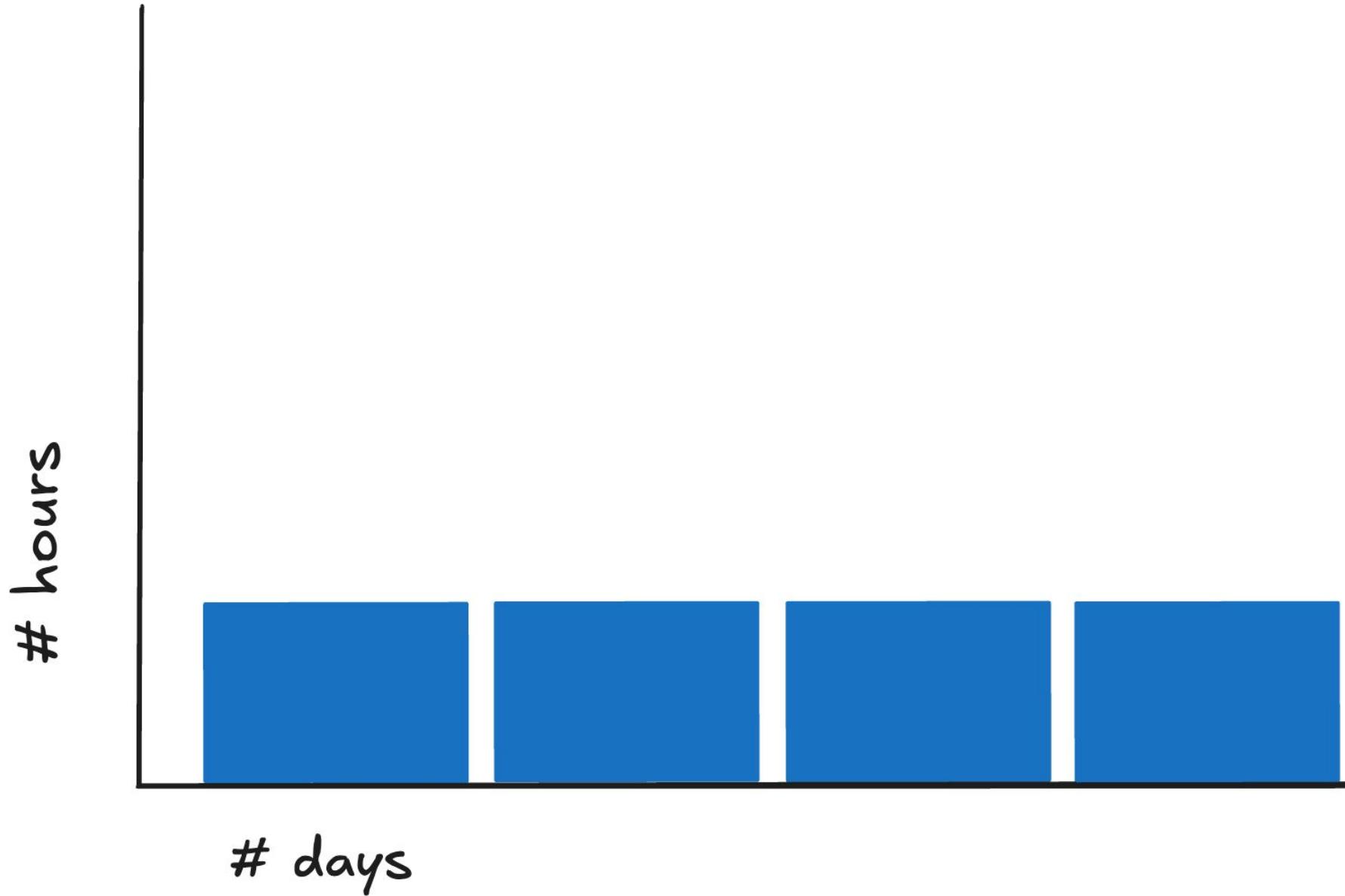
CONCEPT : FORGETTING CURVES



CONCEPT : FORGETTING CURVES



TIME ... OVER TIME



Schedule over time

Courses : 4-6 weeks of content

Content : weekly releases

Schedule over time

Courses : 4-6 weeks of content

Content : weekly releases

A variety of **ways of learning** over time

Asynchronous, solo tutorials/lessons (weekly)

Data science project (weekly)

Group sessions (weekly)

1

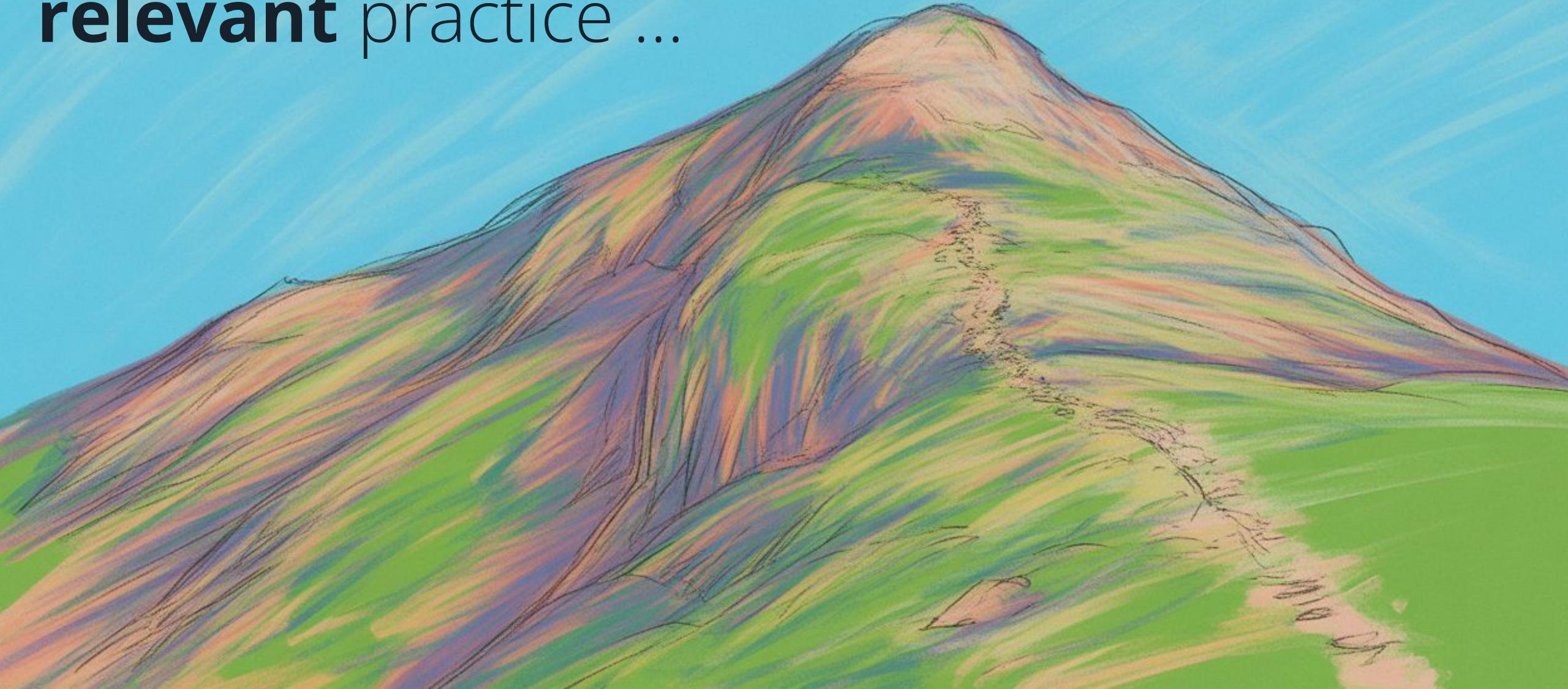
time ... over time



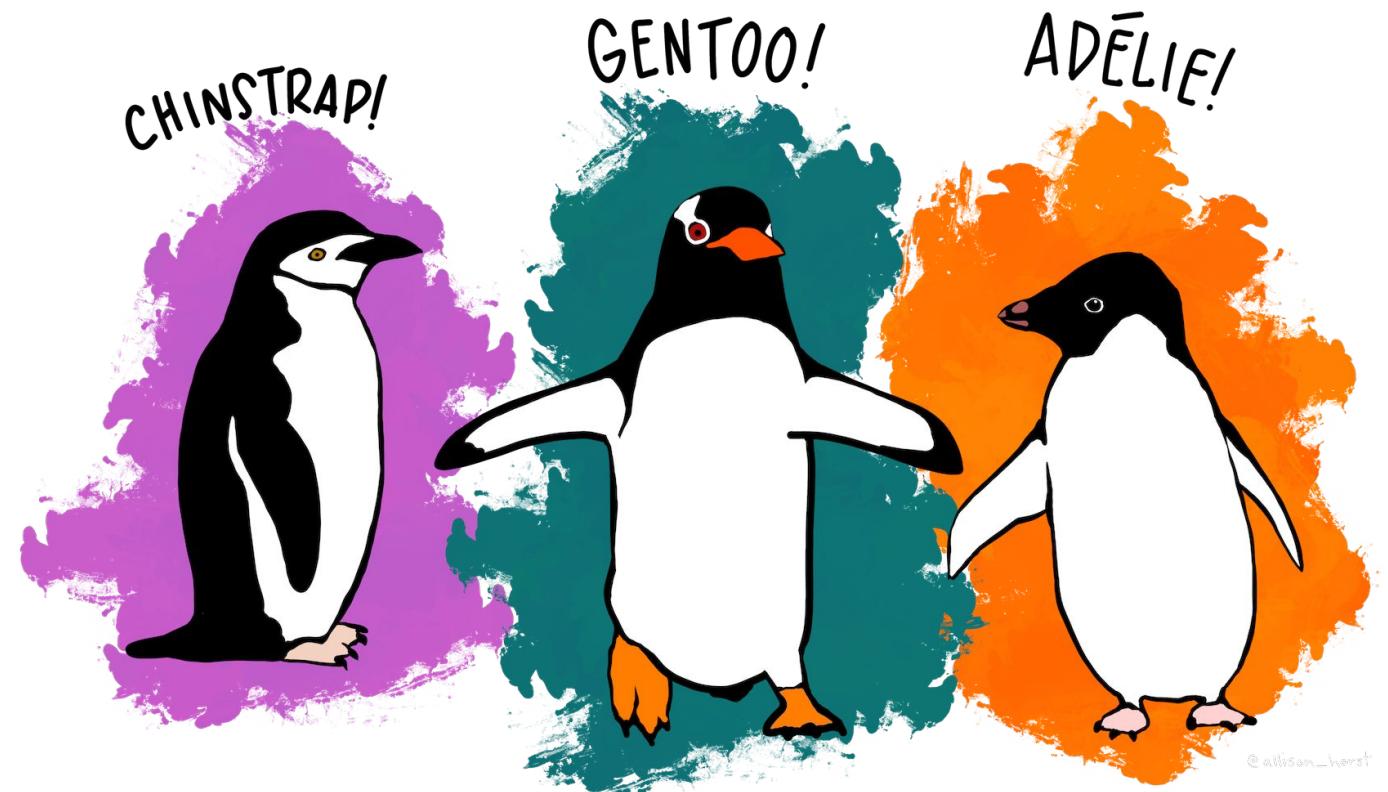
action : when possible, space out learning over time

2

relevant practice ...



RELEVANT PRACTICE ...

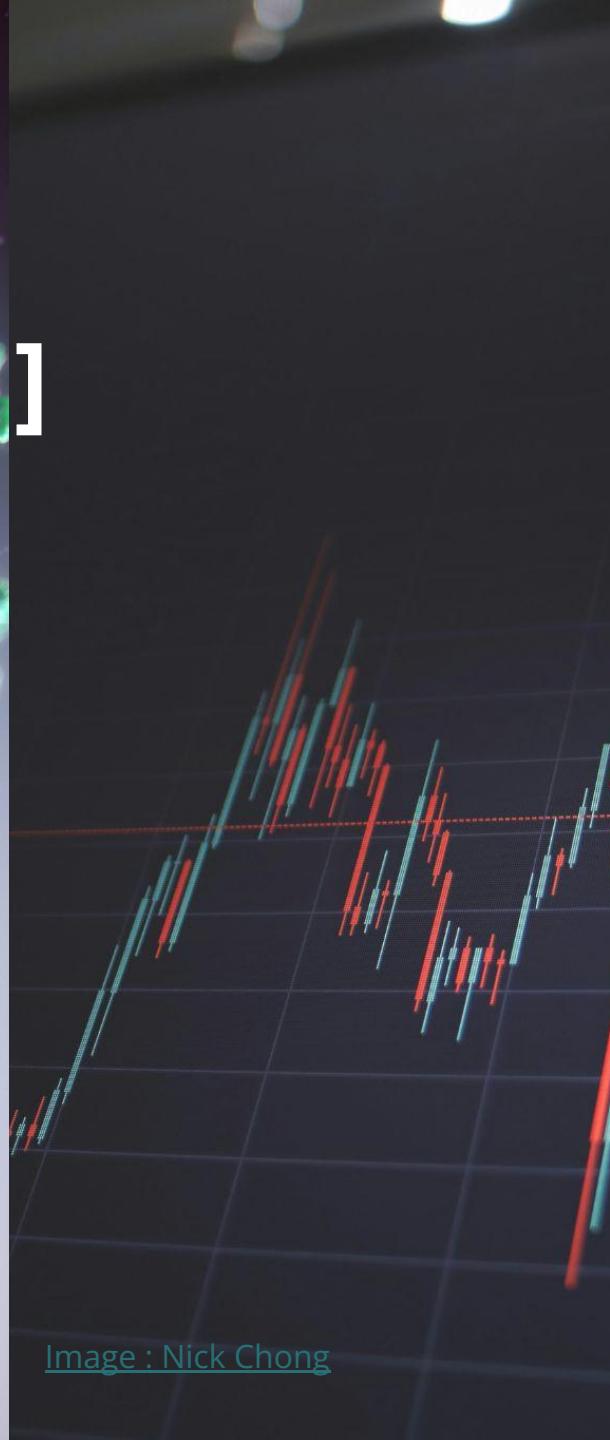




[Image : Ryan Zazueta](#)

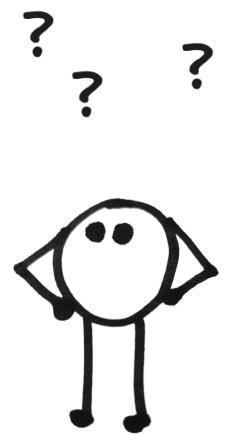
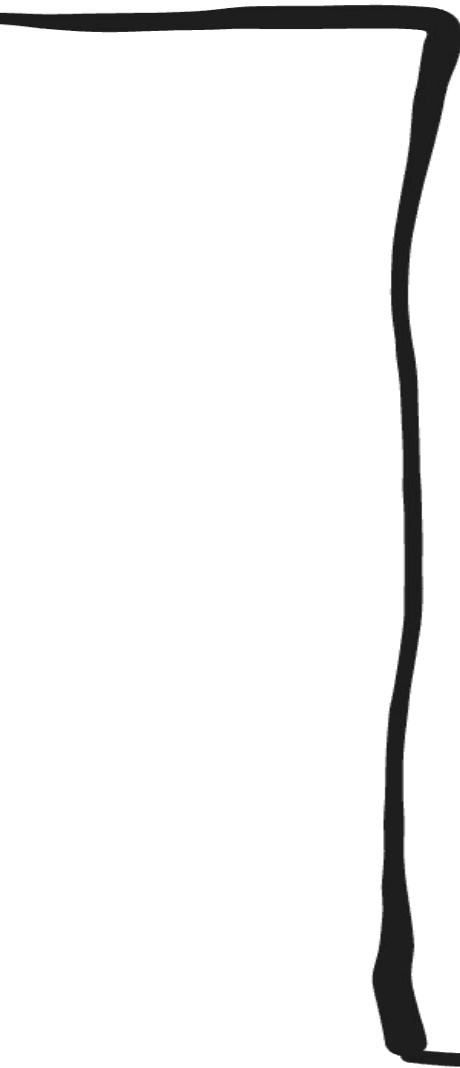


[Image : Fusion Medical Animation](#)



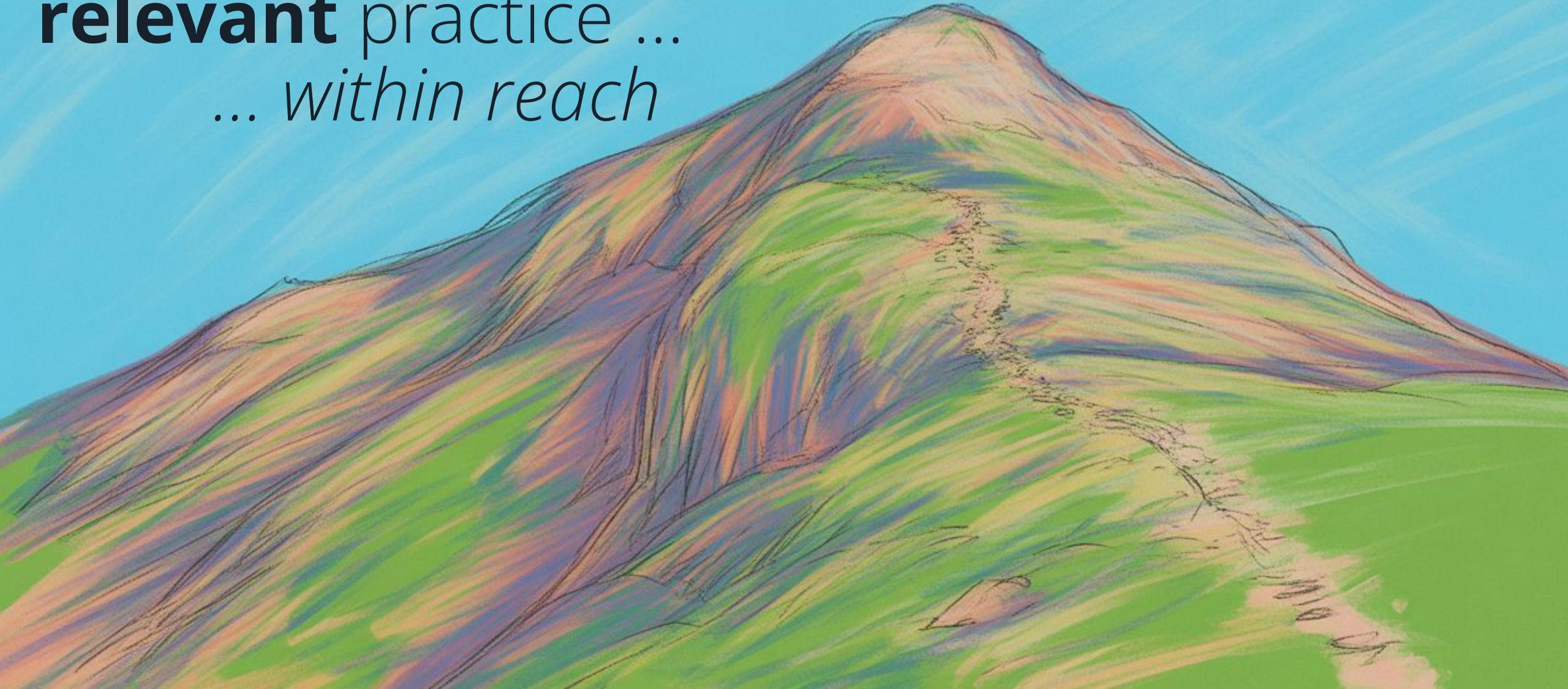
[Image : Nick Chong](#)

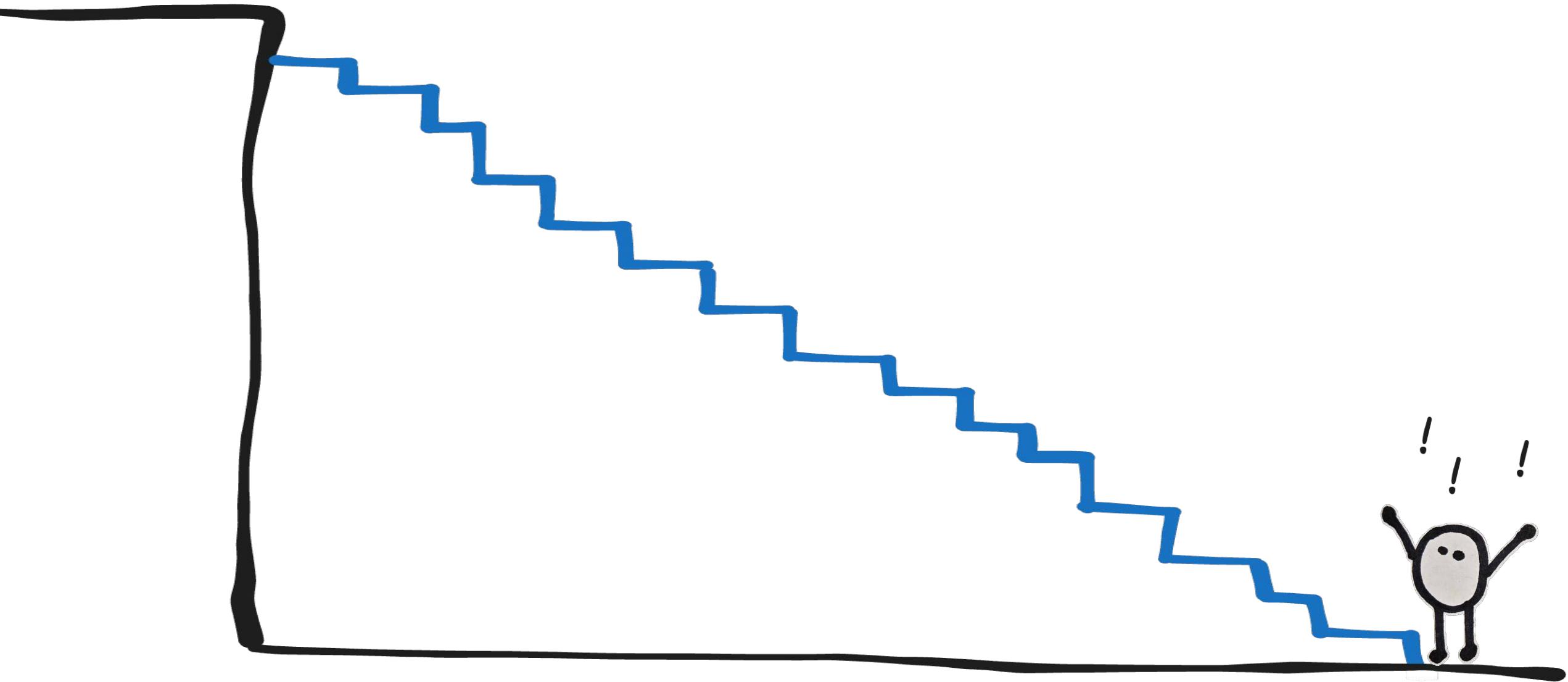
Offer a variety of **data science projects**
representing different **areas of work**



2

relevant practice ...
... *within reach*





Submit the code below to see `summarize()` in action.

```
1 summarize()  
2   penguins,  
3   min_mass = min(body_mass_g, na.rm = TRUE),  
4   max_mass = max(body_mass_g, na.rm = TRUE)  
5 )|
```

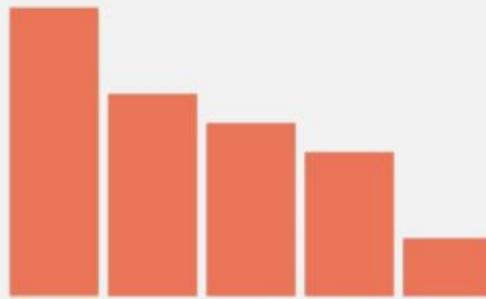
Try it now. Fill in the blanks to recreate the table below.

```
1 penguins %>%
2   summarize(
3     ---- = mean(____, na.rm = TRUE),
4     ---- = mean(____, na.rm = TRUE)
5   )
```



Use `summarize()` to return the minimum and maximum values of year in `penguins`. Use the column names `year_min` and `year_max`.

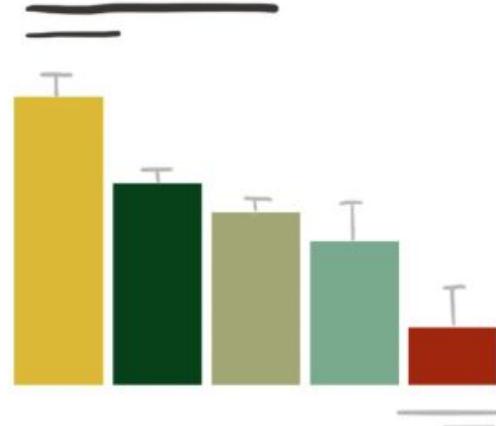
weekly data science projects



0. recreate this!



1. recreation

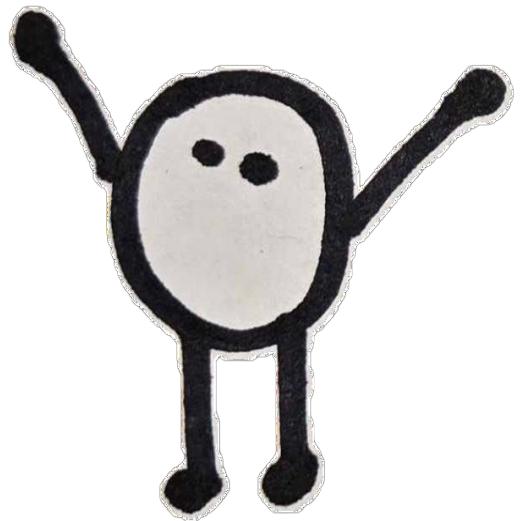


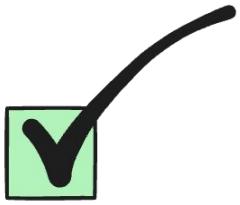
2. extension

2

relevant practice ...
... *within reach*

action : keep practice close to the final application
and provide small steps to get to goals

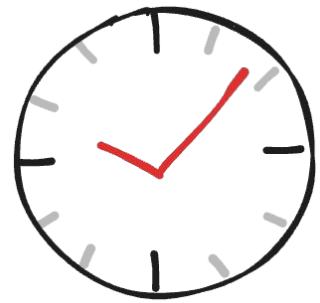




relevant tasks

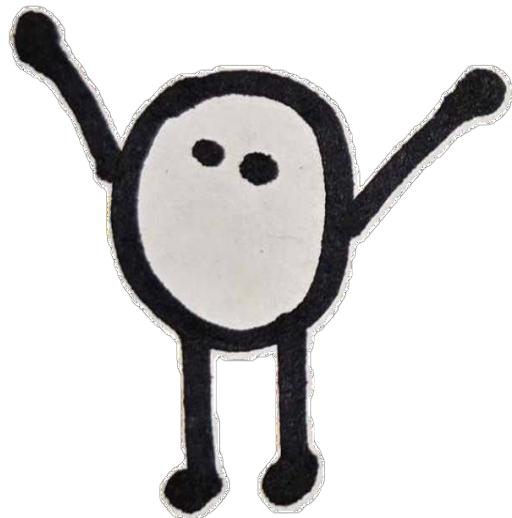


relevant data



time

```
data |>  
  function(success)
```

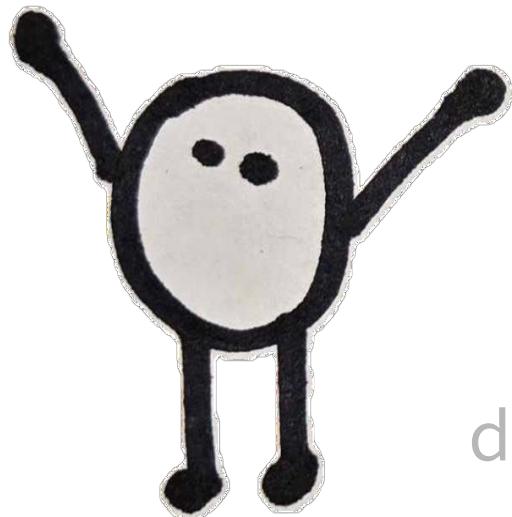


```
data |>  
  function(success)
```



```
data |>  
  function(success)
```

`data |>
function(success)`



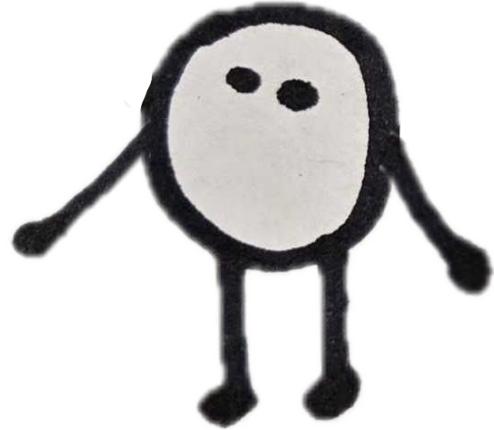
`data |>
function(success)`

`data |>
function(success)`

```
data |>  
  function(success)
```

```
error(you, failed)
```

```
data |>  
  function(success)
```



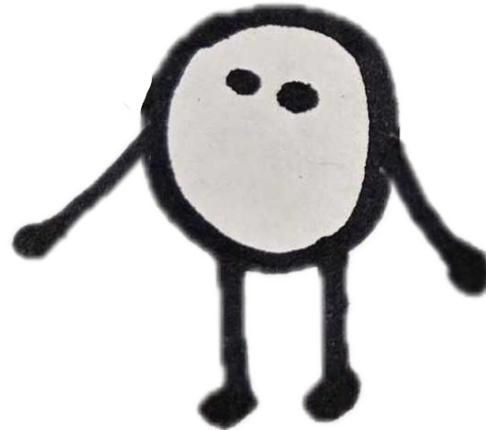
```
data |>  
  function(success)
```

error(you,fail-again)

data |>
function(success)

error(you,failed)

data |>
function(success)



data |>
function(success)

error(you,fail-again)

data |>
function(success)



error(you,failed)

data |>
function(success)

data |>
function(success)

error(nothing,works)

error(nothing, works)

error(you, fail-again)

function(success)

error(you, failed)

error(you, failed)

error(you, failed)

data |>
function(success)

error(you, failed)

error(you, fail-again)

error(you, failed)

data |>
function(success)

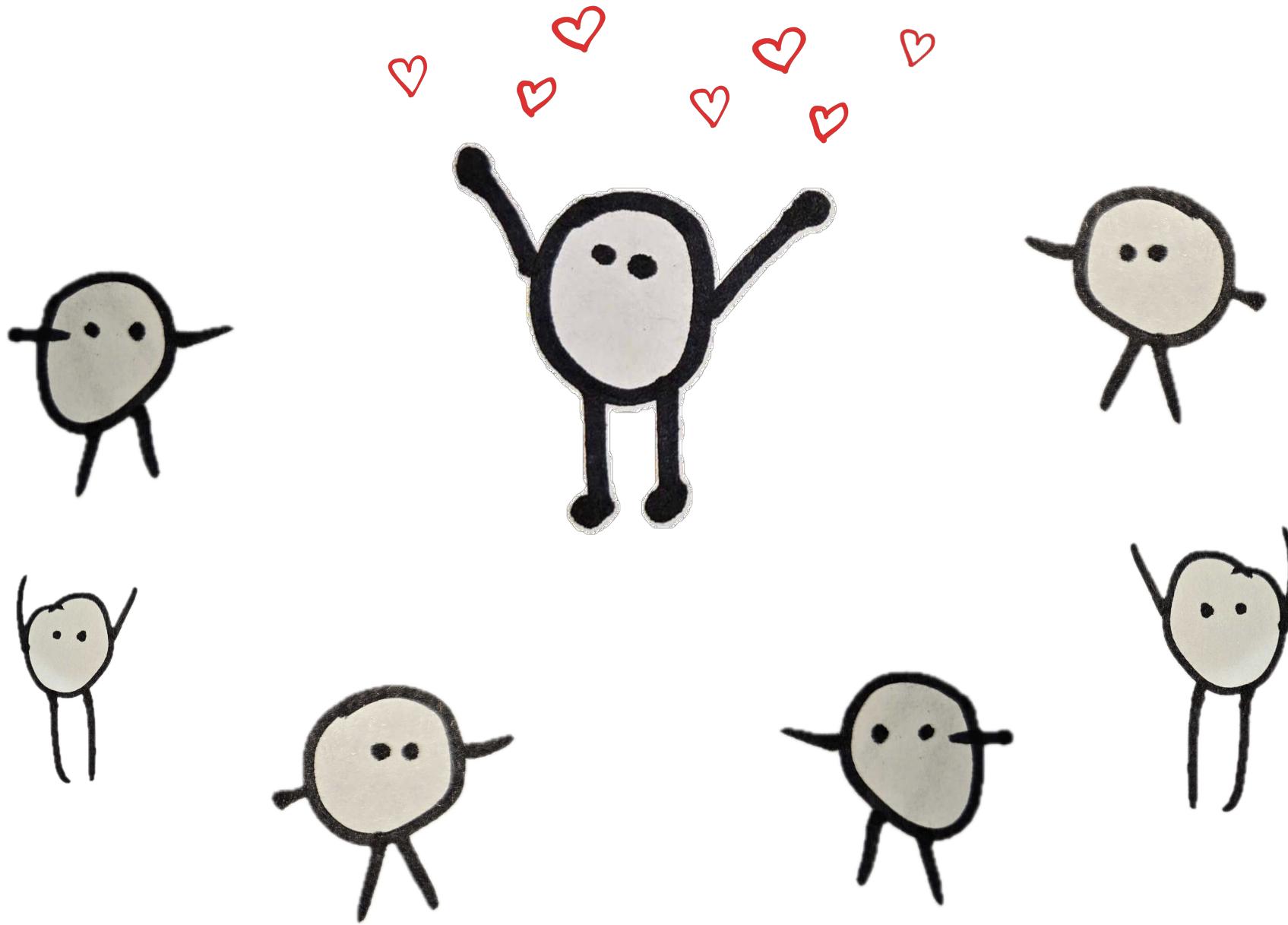
error(you, fail-again)

error(nothing, works)

error(nothing, works)

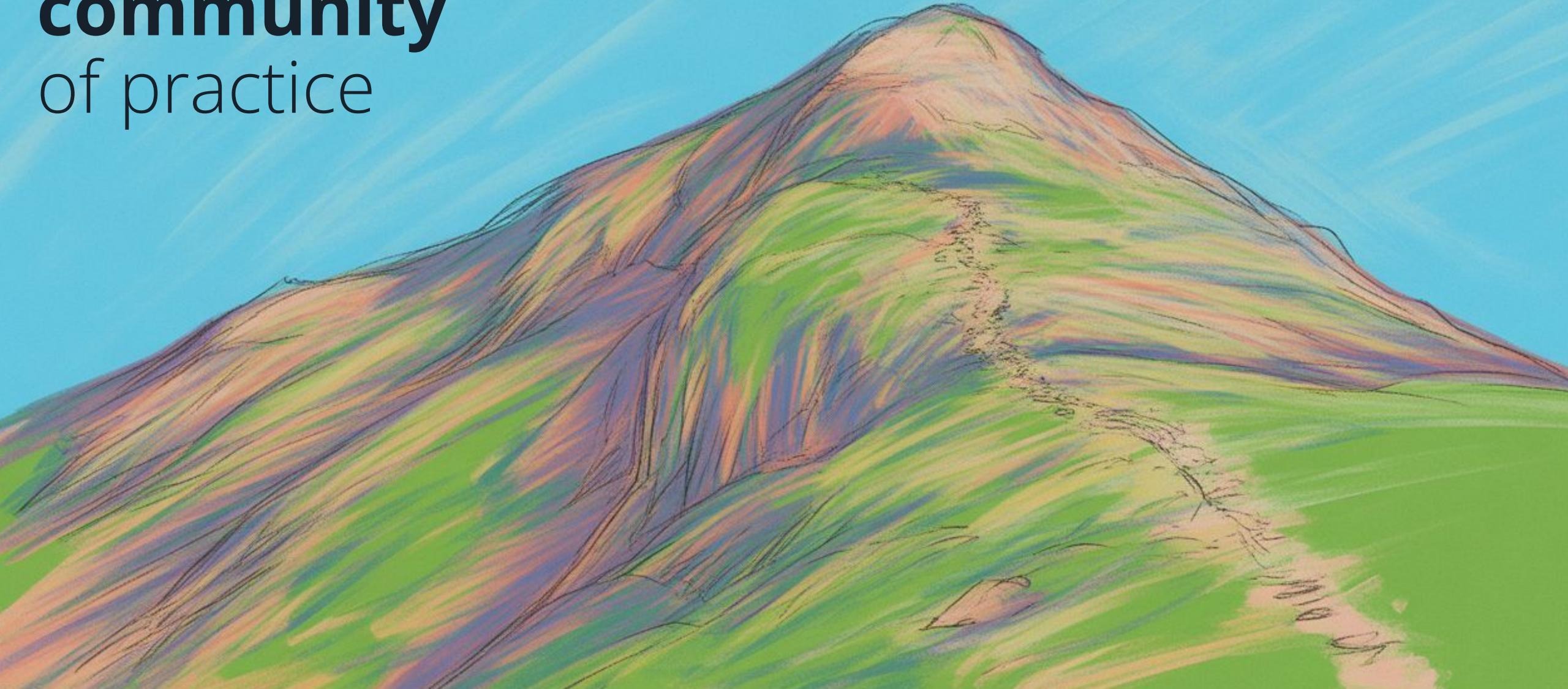






3

community of practice





community

[Photo by Yonecia Carswell on Unsplash](#)

community

Small groups of learners

community

Small groups of learners
Experienced mentor

community

mentor can demonstrate

tips / tricks

best practices

how to find information

POSIT ACADEMY :: MENTOR



Photo by Louise Viallesoubranne on Unsplash

community

mentor can normalize
not knowing
asking questions
making mistakes
moments of struggle

community

" It often surprises me
how much reassurance
adults need when they're
learning. "

- [Academy mentor]

community

**mentor can
model kindness
+ curiosity**

*solve problems - together
celebrate - together
build resilience*

mentoring "bingo cards"

"Let's check the documentation..."	"Who else encountered this issue?"	"What else did you try?"	"Let's ask the room ... what other ideas do you have?"	"Tell us a bit about what you did on line ----"	Celebrate wins of all sizes	Normalize making mistakes
Admit you don't know the answer	Offer specific, positive feedback	Have a learner live code, taking suggestions from the room	Reframe a negative comment to something positive	Separate "expert" (no) from "expertise" (yes), showing learners they can be in your chair someday	Catch yourself describing code in words ... and stop to live code, instead.	Emphasize that we are here to build a community of practice (support after the mentor leaves)
Provide a link to an external source	Highlight best practices (code formatting, etc)	Background yourself + foreground learners	Relate the lesson to a real-world application	Hold awkward silence	Demonstrate problem solving and information finding	Set a norm where learners ask each other questions
Thank all for attending the session...	...especially folks who did not complete the work.	Normalize asking questions	Remind learners: a goal of Academy is to teach them how to teach themselves	Manage time in the room (and any dominating people)	Offer 1:1s to learners who are behind or struggling	Remember: Ask > Show > Tell
"What do you think?"	Redefine success	"What questions do you have?"	"How does this apply to your daily work?"	"What else do you see?"	Foster a sense of psychological safety in your group	"Hmm... What do you all think?" (Turn the question back to the room.)

3

community of practice

A colorful illustration of a mountain peak with a winding path leading up to it. The mountain is covered in various shades of green, yellow, and orange, suggesting different vegetation or geological layers. A narrow, light-colored path winds its way up the side of the mountain, starting from the bottom left and curving upwards towards the peak. The sky above the mountain is a clear, bright blue.

action : seek out and foster connection



1

time ... over time

action : when possible, space out learning over time

2

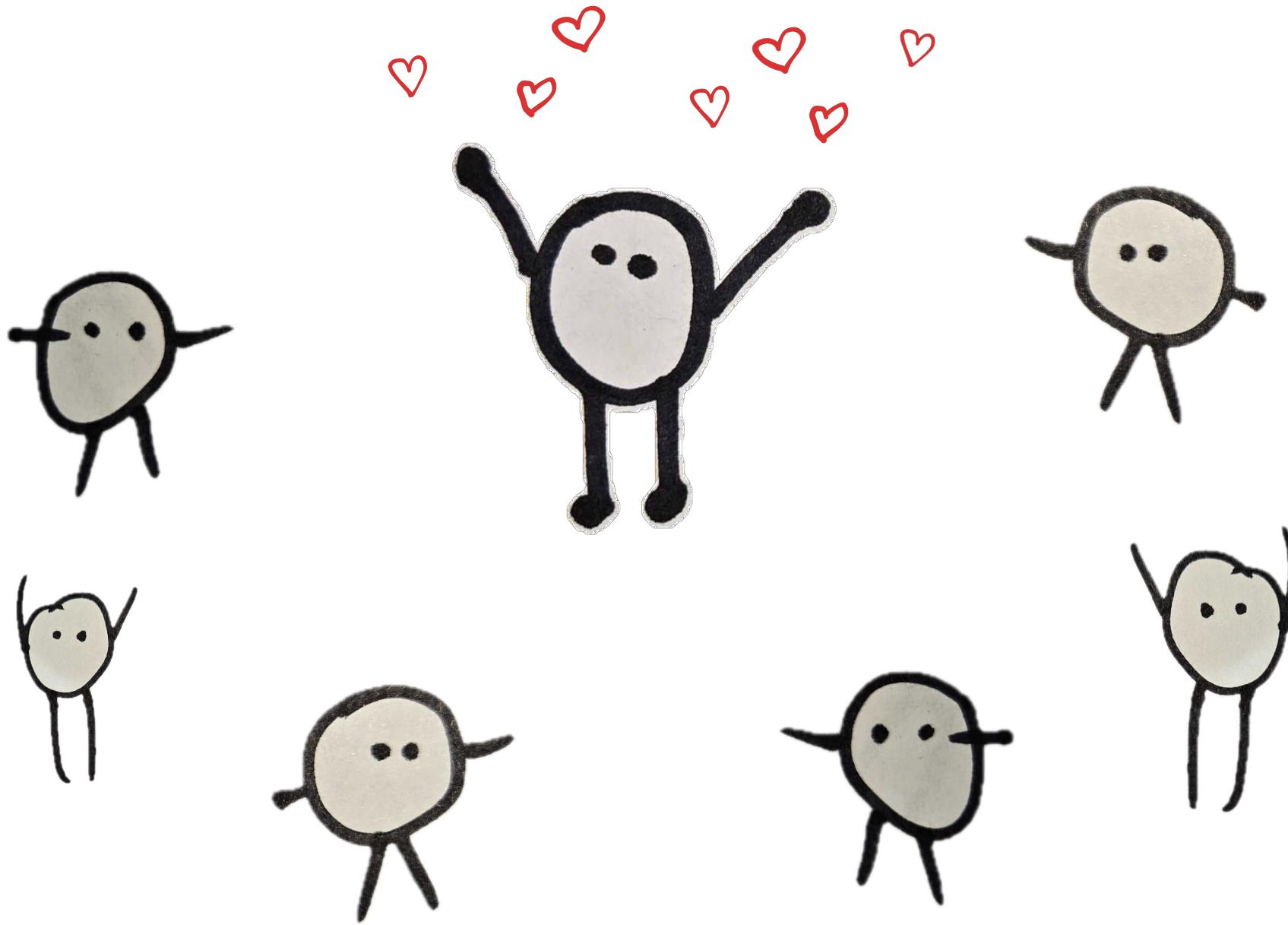
relevant practice ...
... within reach

action : keep practice close to the final application and provide small steps to get to goals

3

community
of practice

action : seek out and foster connection





thank you.

kristin.bott@posit.co
academy@posit.co
github.com/RhoBott/posit-conf-2025



community

[My mentor] is phenomenal. Encouraging, supportive, full of good advice, always encouraging us to strike out on our own and reach farther. And just a lot of fun. I shall miss getting to talk with [them] every week. My coworkers (from a previous cohort) all had [them] and remember [them] fondly, and **[my mentor is] a big part of why I have such positive feelings about the course.**"

 "I'm someone who has a hard time making time to do something for myself (even if it's also for work) and **when I do something with a group I'm held accountable** and I just have **more fun.**"

"I really **enjoyed the cohort aspect**, especially **getting to see my coworkers and learn** about different tips and tricks they learned in their milestone."

Posit Academy customer feedback

...after using code to clean and wrangle their data pipeline, they **anticipate saving 160+ hours a year.**

One of their employees has **saved 30 hours a week**
... [a]nother has **saved 10 hours a week.**

they have been **getting results 10x faster**
since implementing their new workflow

*I've watched a lot of YouTube videos, tried static "courses", and gone through books online. I gained more **skills** and confidence with Posit Academy than I did in ~2-3 years of "self-education".*

Unlike bootcamps, it did not overload learners or advance too quickly. Unlike [online courses], the collaborative approach of learners and mentors overcame lack of accountability for completion.

I feel like I am now 1,000 times more capable of cleaning and arranging the data in a way that I can get insight out of it.

"[My mentor] is phenomenal. Encouraging, supportive, full of good advice, always encouraging us to strike out on our own and reach farther. And just a lot of fun. I shall miss getting to talk with [them] every week. My coworkers (from a previous cohort) all had [them] and remember [them] fondly, and **[my mentor is] a big part of why I have such positive feelings about the course."**



DEMAMY :: RELEVANT PRACTICE ... WITHIN REACH

