



# Structuring information delivery and activities

[teach-shiny.rbind.io](https://teach-shiny.rbind.io)

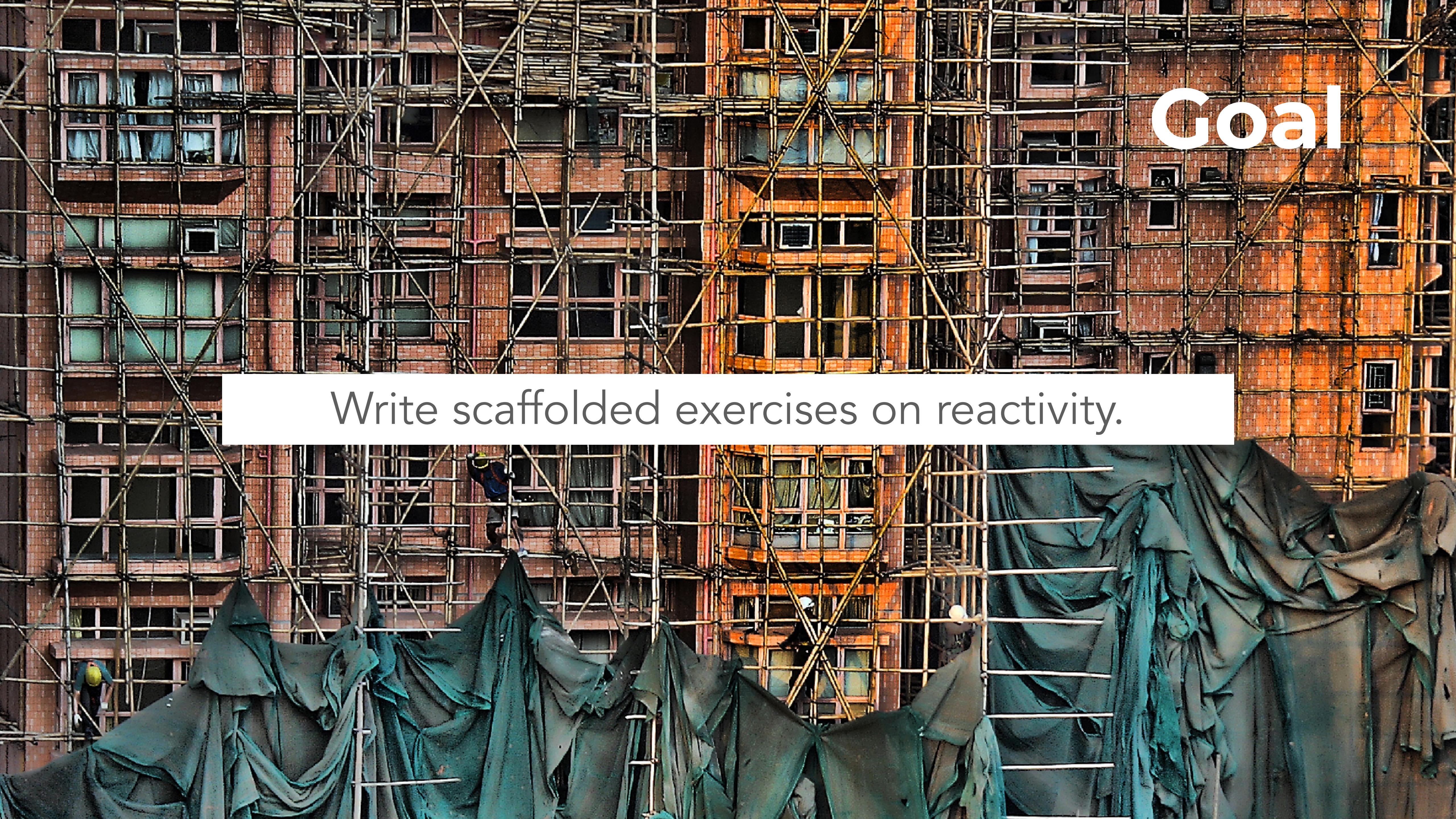
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Mine Çetinkaya-Rundel

@minebocek

mine-cetinkaya-rundel

mine@rstudio.com



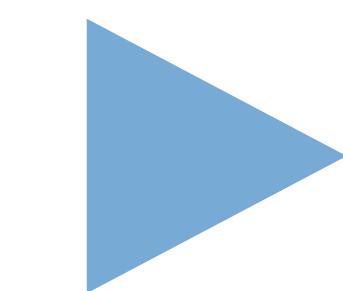
Goal

Write scaffolded exercises on reactivity.

use  
visual  
cues



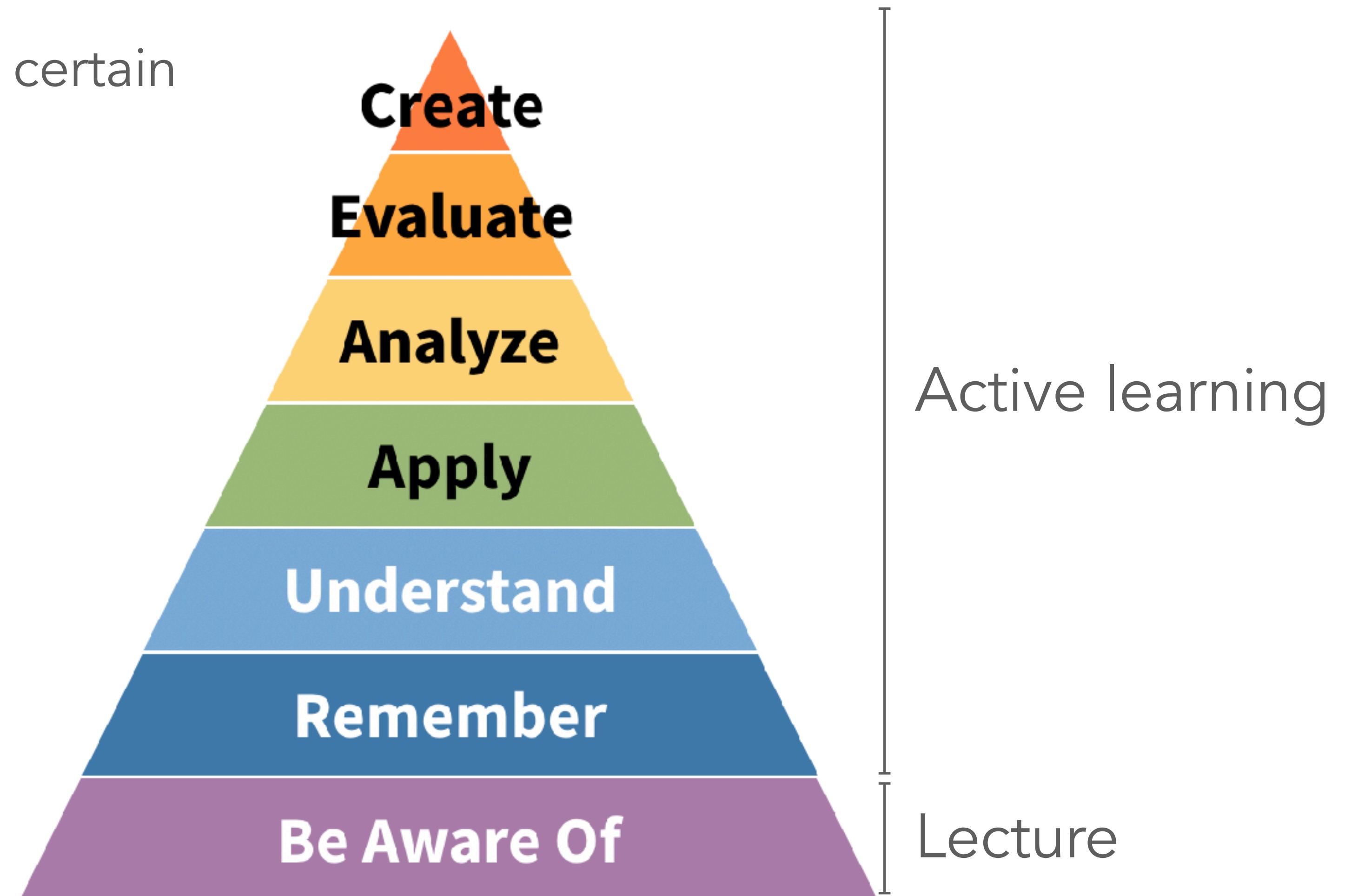
# sprinkle inter- activity



# Method of delivery

How long it takes to deliver certain material depends on

- ▶ Topics covered
- ▶ Level of desired mastery



# Teaching, fast and slow

- ▶ Lecture:
  - ▶ Easy to gauge length
  - ▶ Useful in a workshop setting to make audience aware of features (and provide additional resources for self study)
- ▶ Active learning:
  - ▶ Difficult to gauge length, often takes longer than you think
  - ▶ Much more likely to hit higher tiers of learning in Bloom's taxonomy
  - ▶ It's not what you teach, it's what they learn!

# Active learning

- ▶ Polling questions
- ▶ Peer Instruction
- ▶ Think-Pair-Share
- ▶ One Minute Paper
- ▶ Work together in teams
- ▶ Assessments

Go to [rstd.io/shiny-poll](https://rstd.io/shiny-poll) to respond

## What is wrong with this app?

- (a) Line 8: there should be a comma at the end
- (b) Line 13: `add_2` should be a reactive expression
- (c) Line 14: `current_x` should be a reactive expression
- (d) Line 15: should use `renderUI` instead of `renderText`

```
01 library(shiny)
02
03 # UI
04 ui <- fluidPage(
05   titlePanel("Add 2"),
06   sliderInput("x", "Select x", min = 1,
07               max = 50, value = 30),
08   textOutput("x_updated")
09 )
10
11 # Server
12 server <- function(input, output) {
13   add_2 <- function(x) { x + 2 }
14   current_x <- add_2(input$x)
15   output$x_updated <- renderText({ current_x })
16 }
17
18 # Create Shiny app object
19 shinyApp(ui, server)
```

1.

Polling question



Discuss your response with your partner, then go to [rstd.io/shiny-poll](https://rstd.io/shiny-poll) to respond again

What is wrong with this app?

- (a) Line 8: there should be a comma at the end
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```

3.

Peer instruction



# How would you correct this app code?

Think about it first for 2 minutes, then pair up and discuss your responses. Note, there is more than one correct answer.

Then, you will be asked to describe your partner's answer to the class.

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```

Think - pair - share



# How would you correct this app code?

Before you leave class, take one minute to write down what was most confusing about this exercise.

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```

One minute paper



# How would you correct this app code?

Get in teams of three and make corrections to the code for this app. Note, there is more than one correct answer.

Then, one member from the team will be asked to present your answer.

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```

Work in teams



# How would you correct this app code?

Pop quiz! Make corrections to the app code, and submit your code and a link to your deployed app.

Note, there is more than one correct answer. For this quiz you are asked to submit **two** working solutions.

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Assessment



# Your turn

- ▶ Determine the ideal length of time students should be given for the following exercises we reviewed earlier:
  - ▶ think-pair-share
  - ▶ work in teams
  - ▶ quiz
  - ▶ Compare notes with a partner, discuss any points of disagreement.

Think

**2m 00s**

Pair

**3m 00s**

# Your turn

- ▶ Determine the ideal length of time students should be given for the following exercises we reviewed earlier:
  - ▶ think-pair-share
  - ▶ work in teams
  - ▶ quiz
  - ▶ Compare notes with a partner, discuss any points of disagreement.

Think

2m 00s

Pair

3m 00s

# Discussion

What are some tips an instructor can use  
for determining how long an exercise  
might take students to complete?

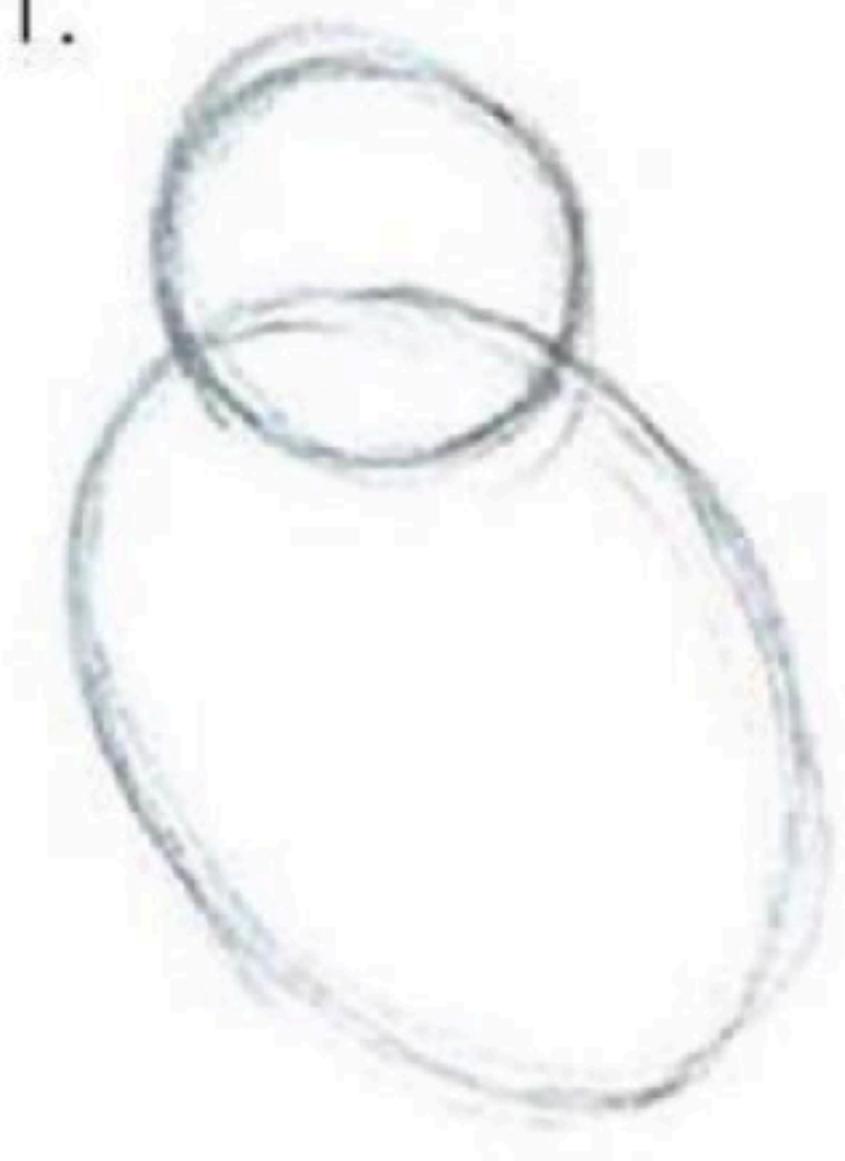
Do the experienced instructors in the room  
have any tips?

scaffold  
your  
exercises

Basically, avoid this!

How to draw an owl

1.



2.



1. Draw some circles

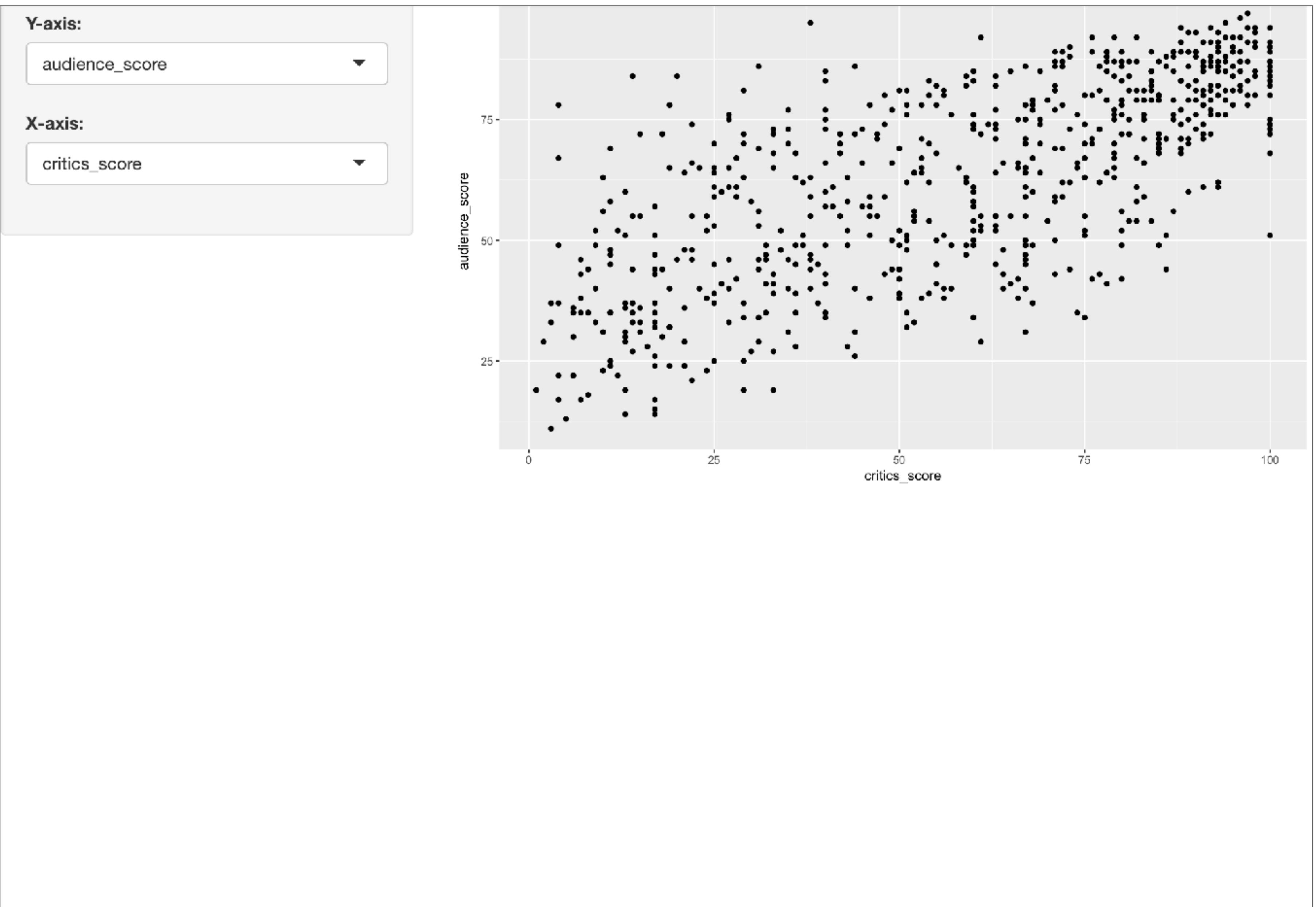
2. Draw the rest of the fucking owl

# Scaffolding over exercises

- ▶ Structure your materials so that you can build up your exercises over time.
- ▶ Works especially well when teaching Shiny — start with a simple (borderline boring) app, build up over a series of exercises to a much more complex (interesting) app.

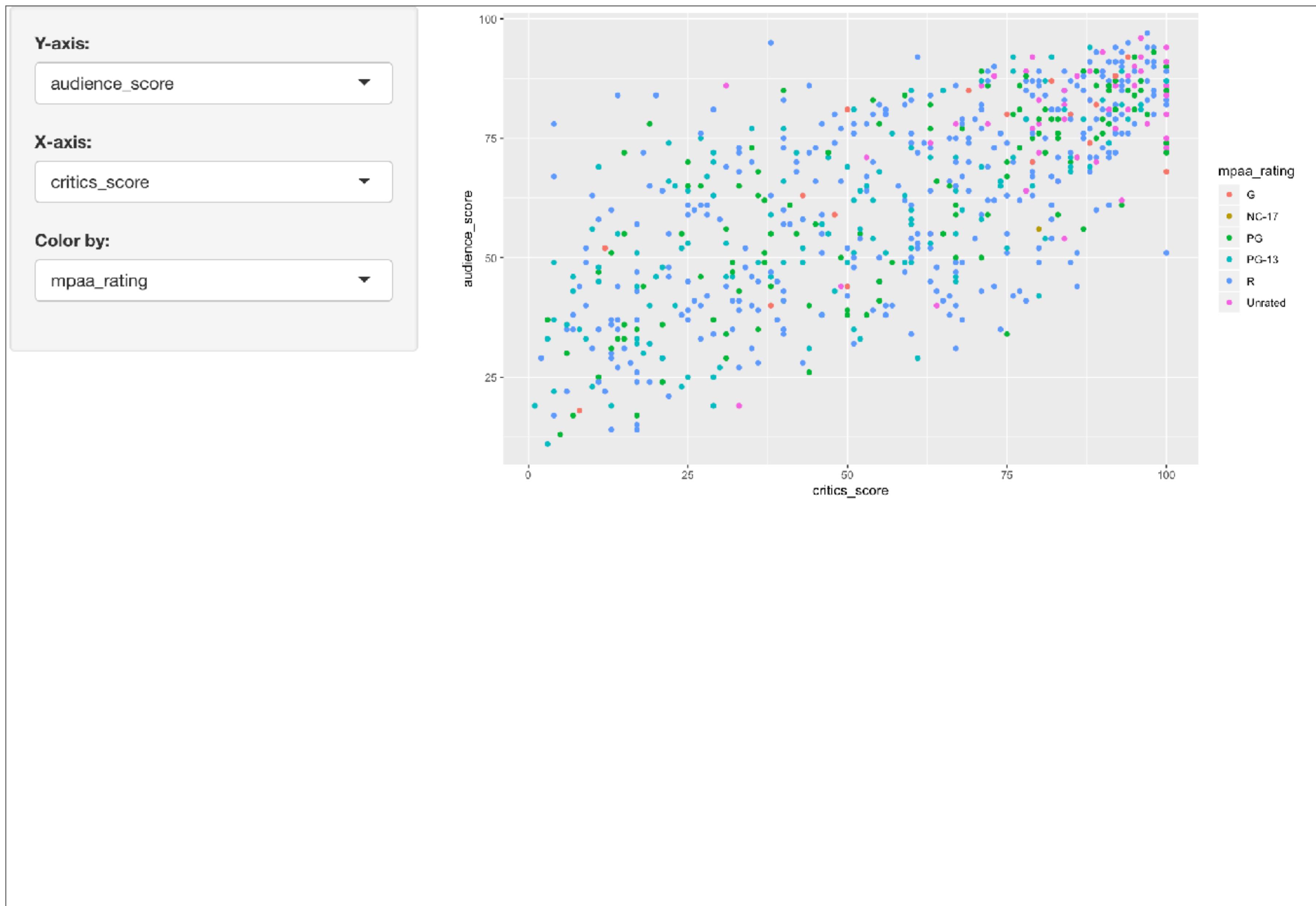
# movies\_01

Beginning of the day



# movies\_02

A few minutes later



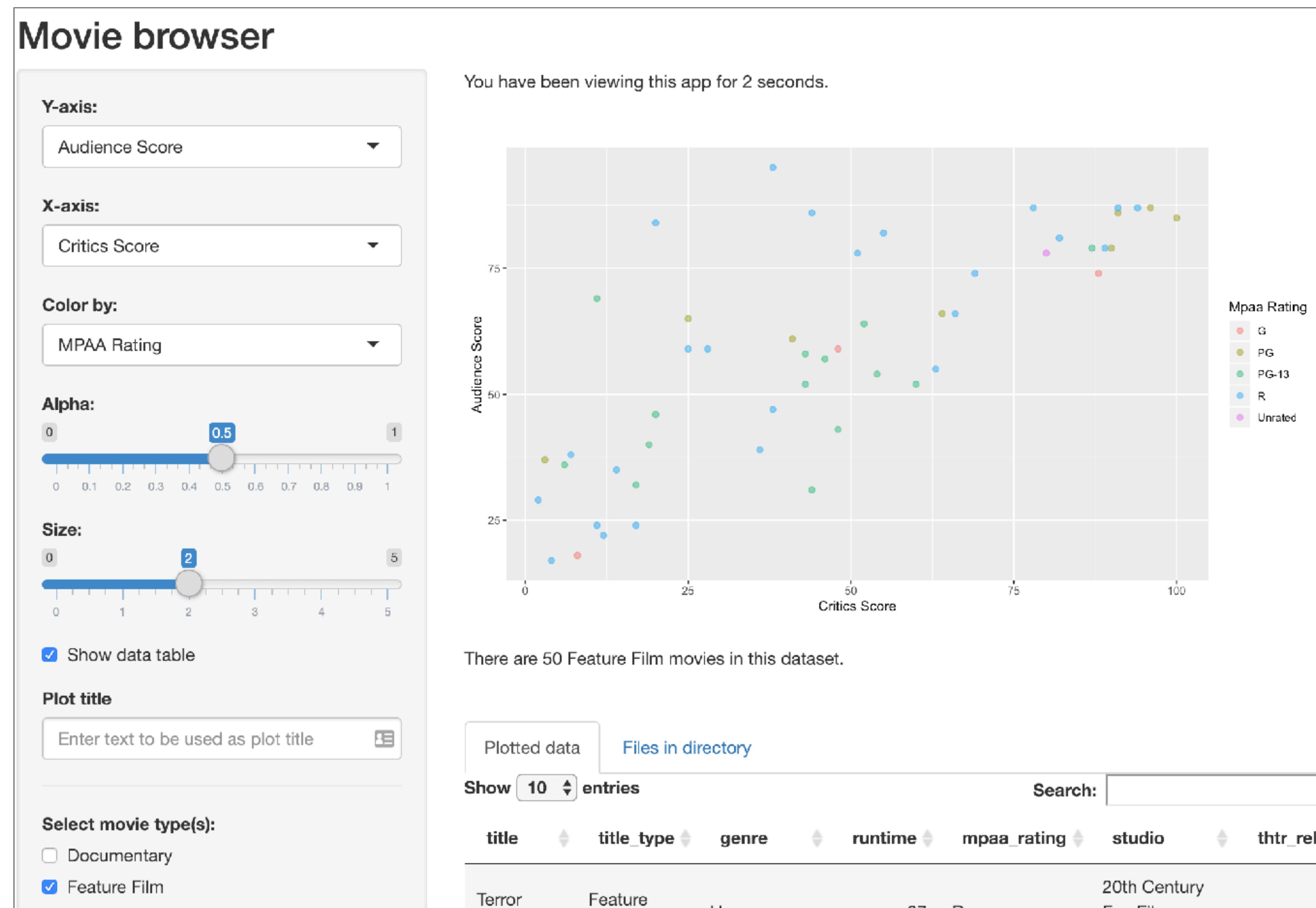
# movies\_03

After reviewing the  
cheatsheet for UI  
widgets



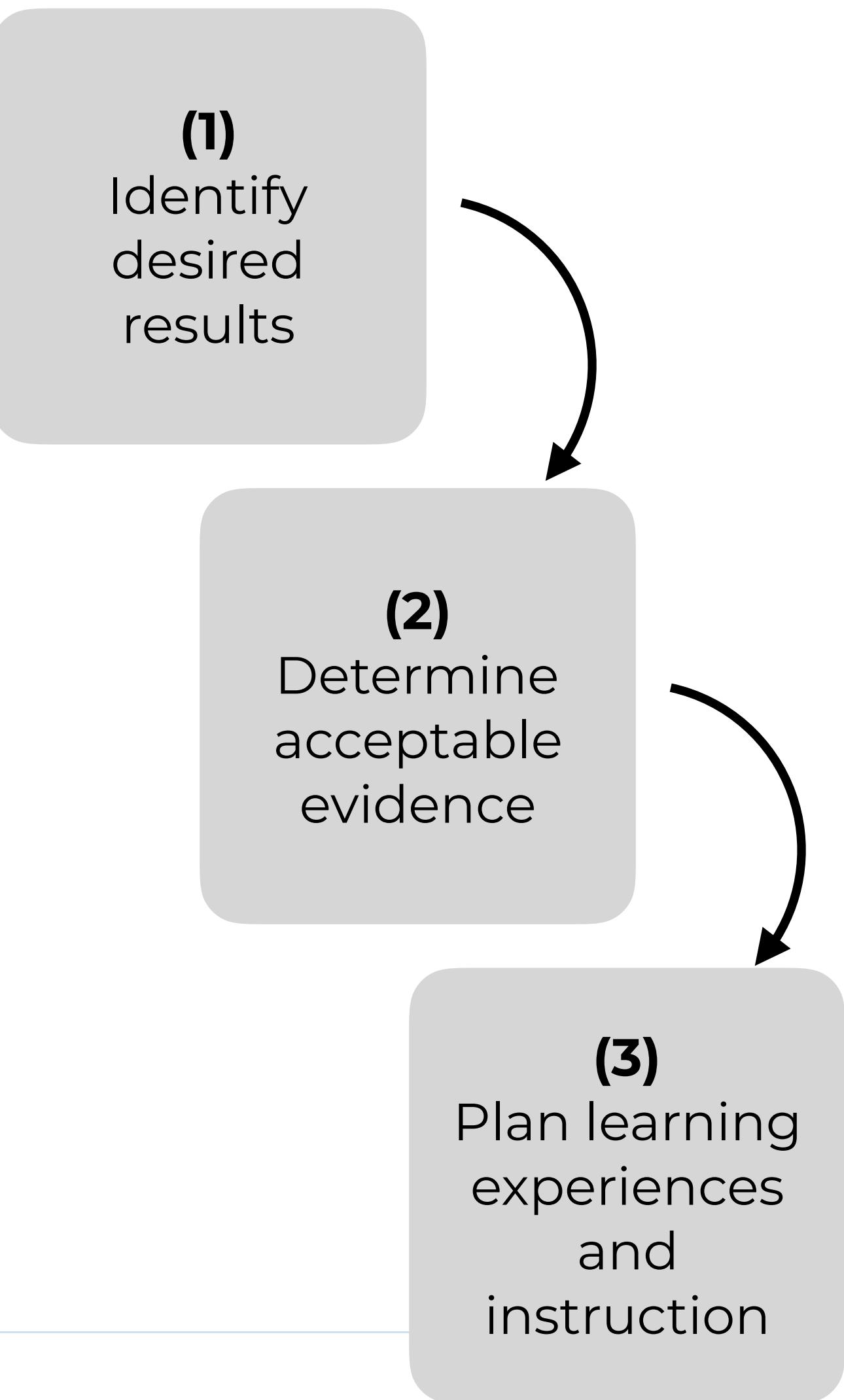
# movies\_14

At the end of 4 hours



# Backwards design

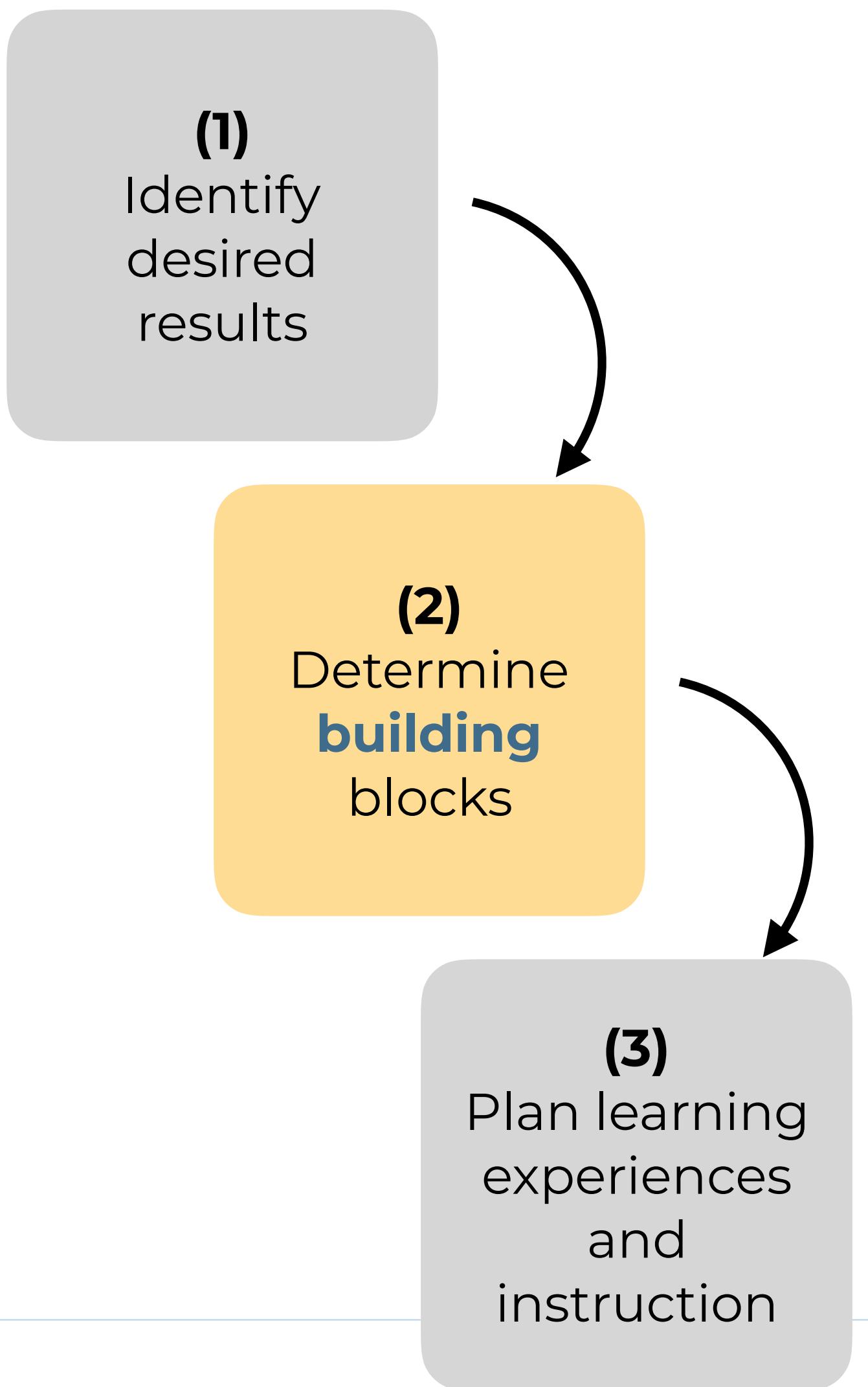
- ▶ Set goals for educational curriculum before choosing instructional methods + forms of assessment
- ▶ Analogous to travel planning - itinerary deliberately designed to meet cultural goals, not purposeless tour of all major sites in a foreign country



Wiggins, Grant P., Grant Wiggins, and Jay McTighe. Understanding by design. Ascd, 2005.

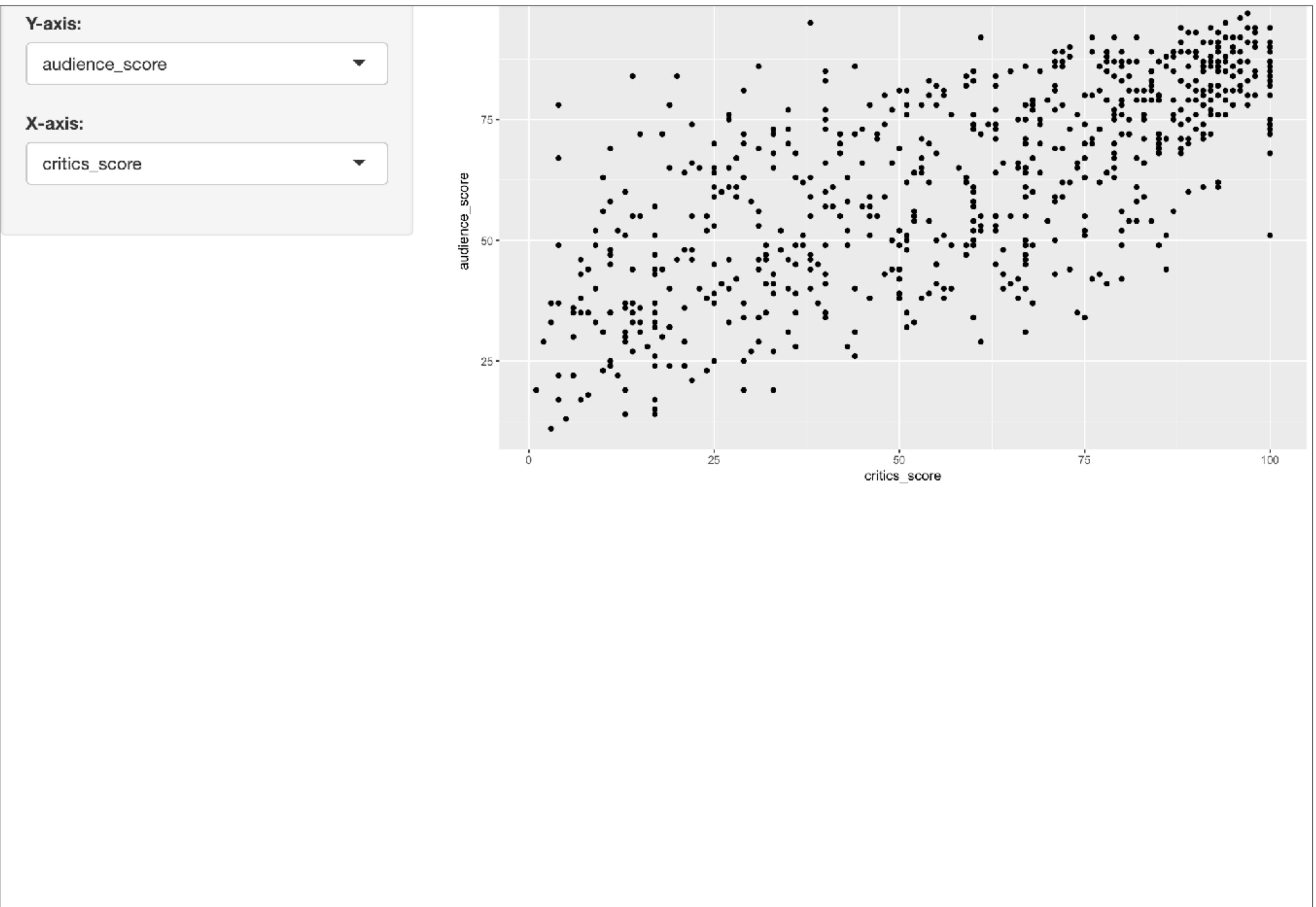
# Designing backwards

- ▶ First expose students to the final produce — a complex (not complicated), striking Shiny app
- ▶ Then teach the building blocks (concepts, functions, features) used along the way



# movies\_01

Beginning of the day



# Your turn

- ▶ Work in teams to write three exercises that lead up to this app.

## Movie browser

Y-axis:

Audience Score

X-axis:

Critics Score

Color by:

MPAA Rating

Alpha:

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

Size:

0 1 2 3 4 5

Select movie type(s):

Documentary

Feature Film

TV Movie



Add link to code

to start from  
make a starting  
with 3  
up at this

► scaffold your exercises

► Item 2

► Item 3