

EPFL

ENG-629

Presenting and Lecturing in Engineering

■ École
polytechnique
fédérale
de Lausanne

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2025



EPFL Schedule Day 1 2025

MORNING

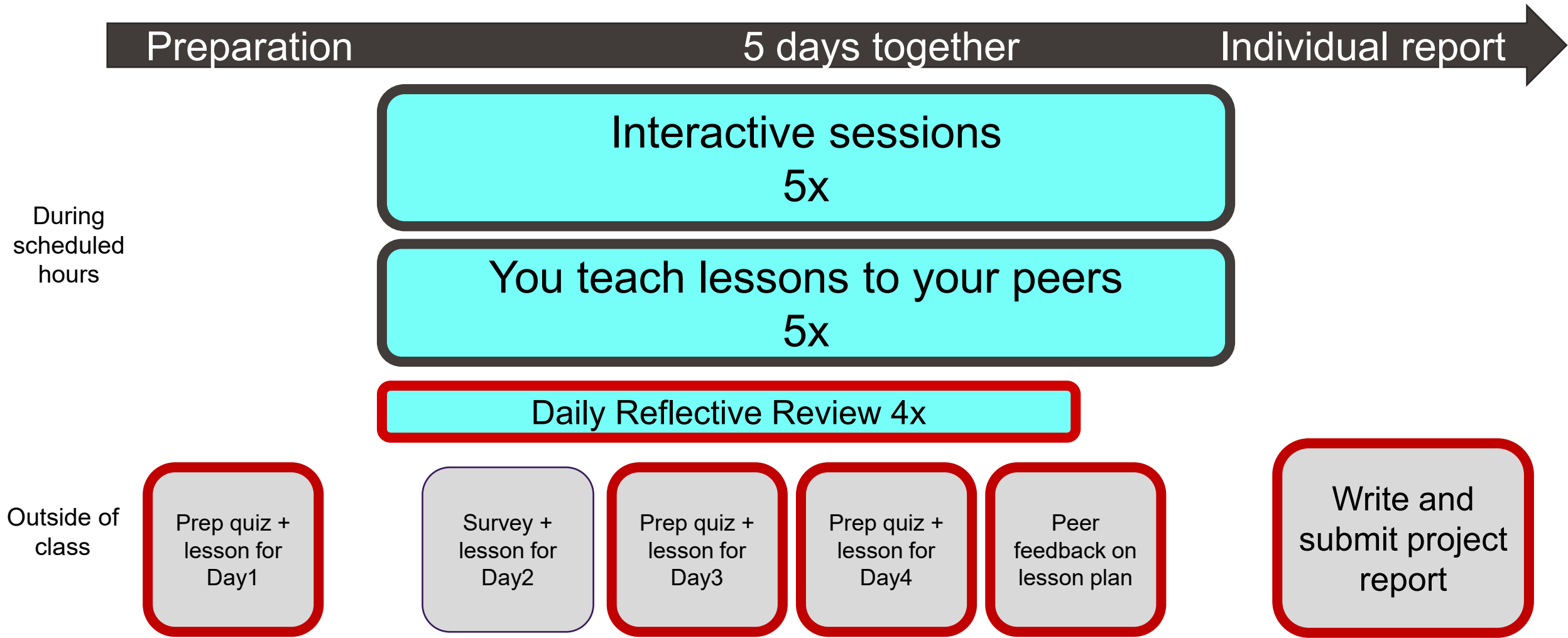
- 9:00 Introductions, structure of this course
- 9.30 Teaching and micro-teaching
- 10:30 *break*
- 10:45 Your Day 1 lessons
- 12:15 Reflective activity
- 12:30 *lunch break*

AFTERNOON

- 13.30 Structuring a lesson
Creating and using presentation supports
- 15:00 *break*
- 15.15 Using learning objectives
LOAFS case studies
- 16.45 Conclusion, prep for Day 2
Reflective activity

****hand in your Daily Reflection*

Structure of This Course



Legend

Blue =


Grey =

Red =

What leads to student success?

On the handout in front of you:

- Select the 5 aspects or strategies that you think are most likely to lead to student success.

Individual task
 ~ 2 mins

Learning objectives

By the end of this lesson, you will be able to:

- Analyse evidence underpinning high-impact teaching and learning aspects & strategies
- Identify strategies that enable the teacher to positively impact student success

What does the evidence support

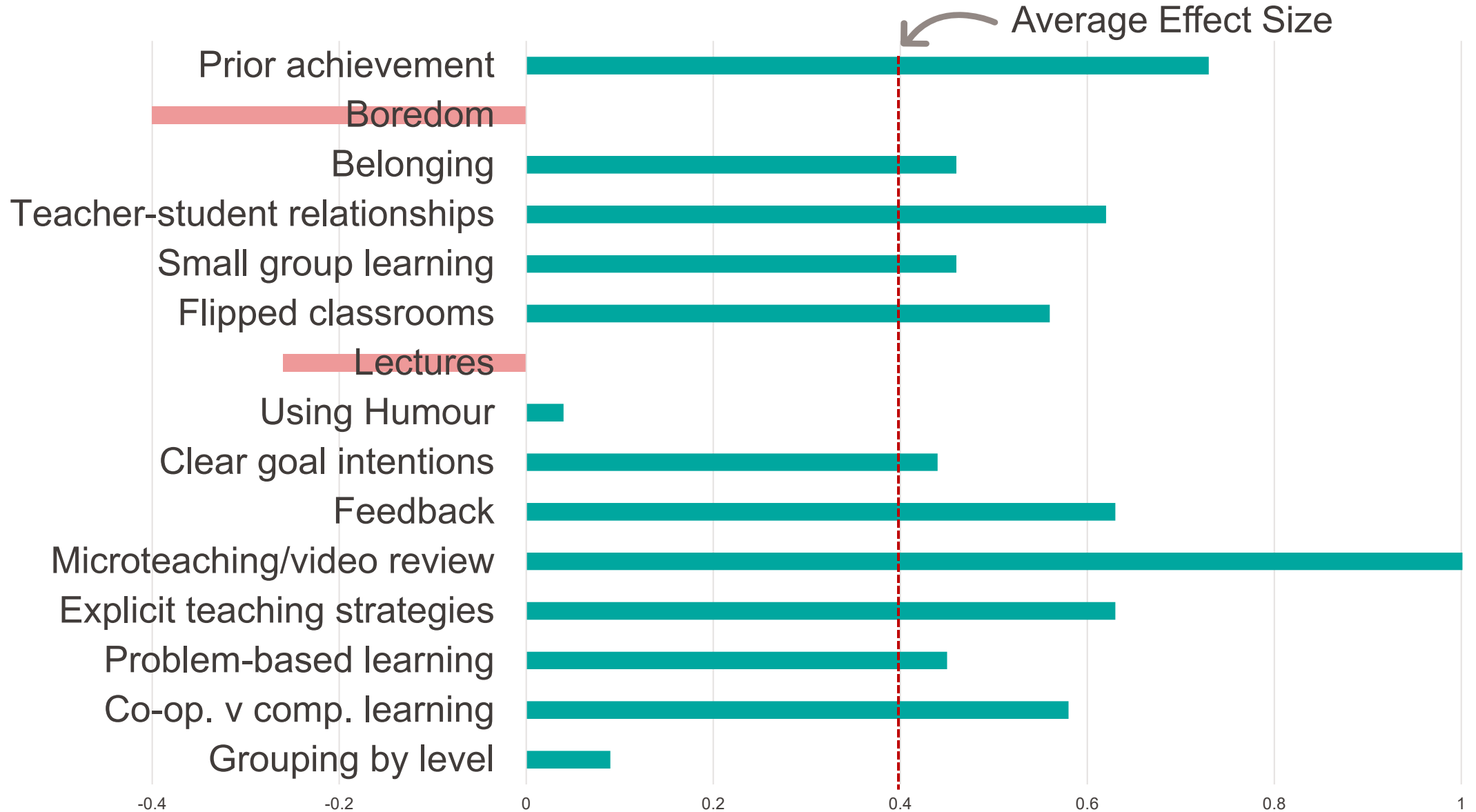
Discuss the following questions with reference to the given table:

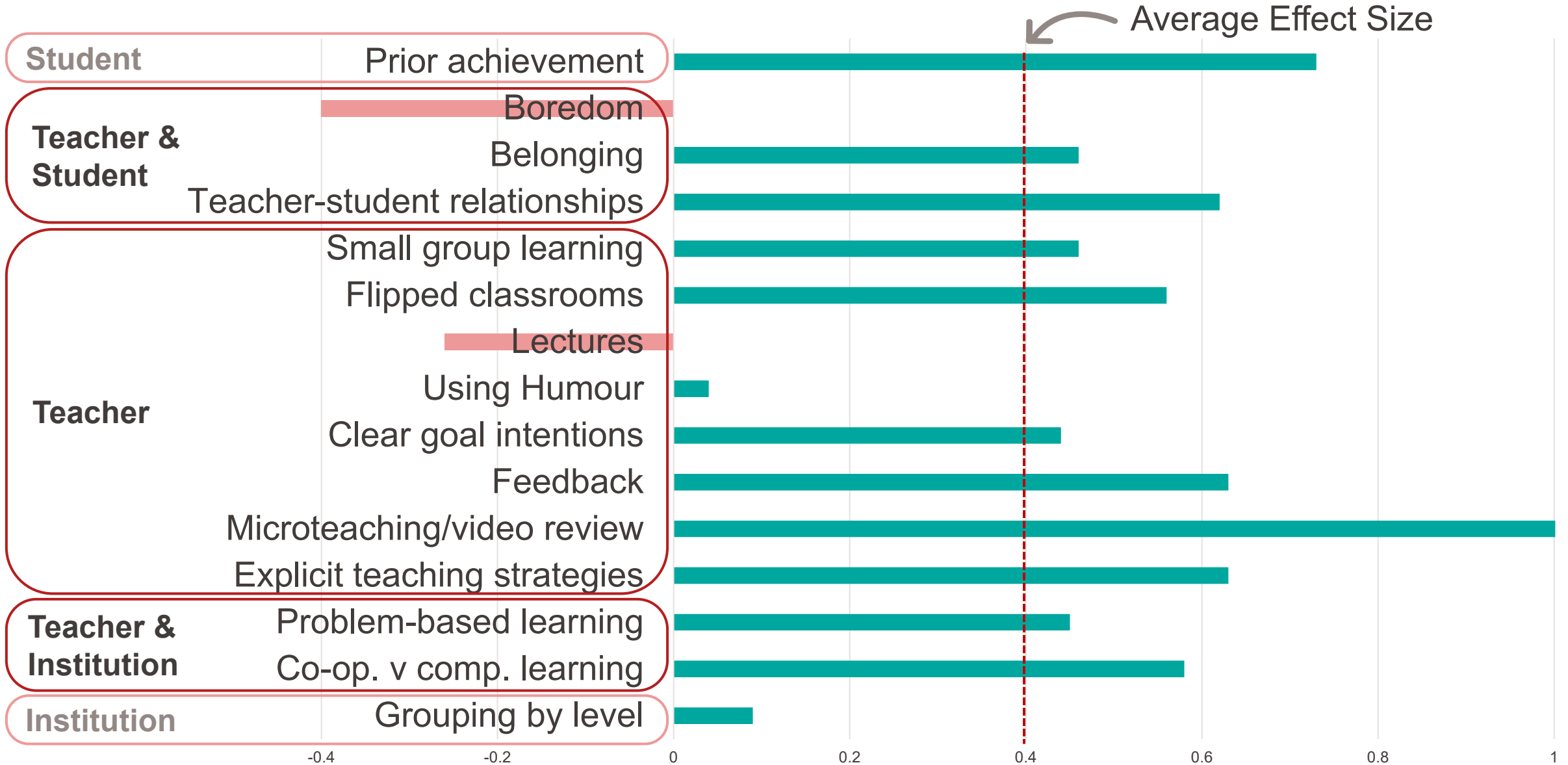
- What data does the table provide?
- Based on the data in the first row, what claim can you make?
- Using all the data, identify 5 things that a teacher should prioritise

Group task

 ~ 5 mins

What should a teacher prioritise?

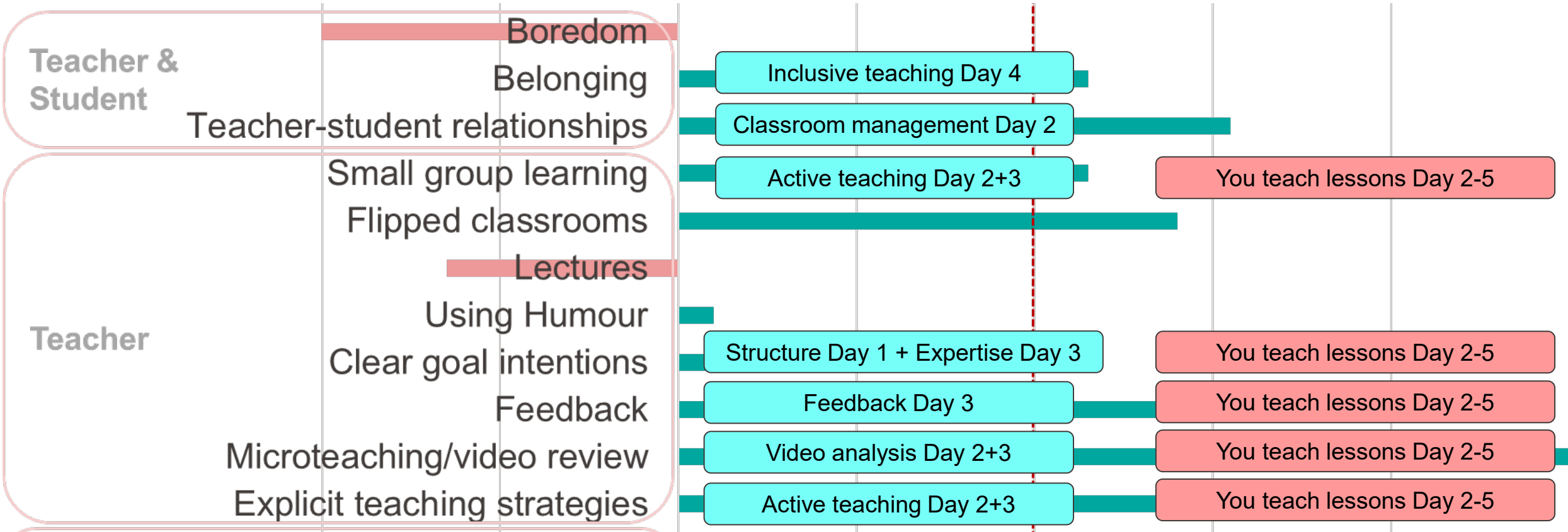




Looking at the activities in this course



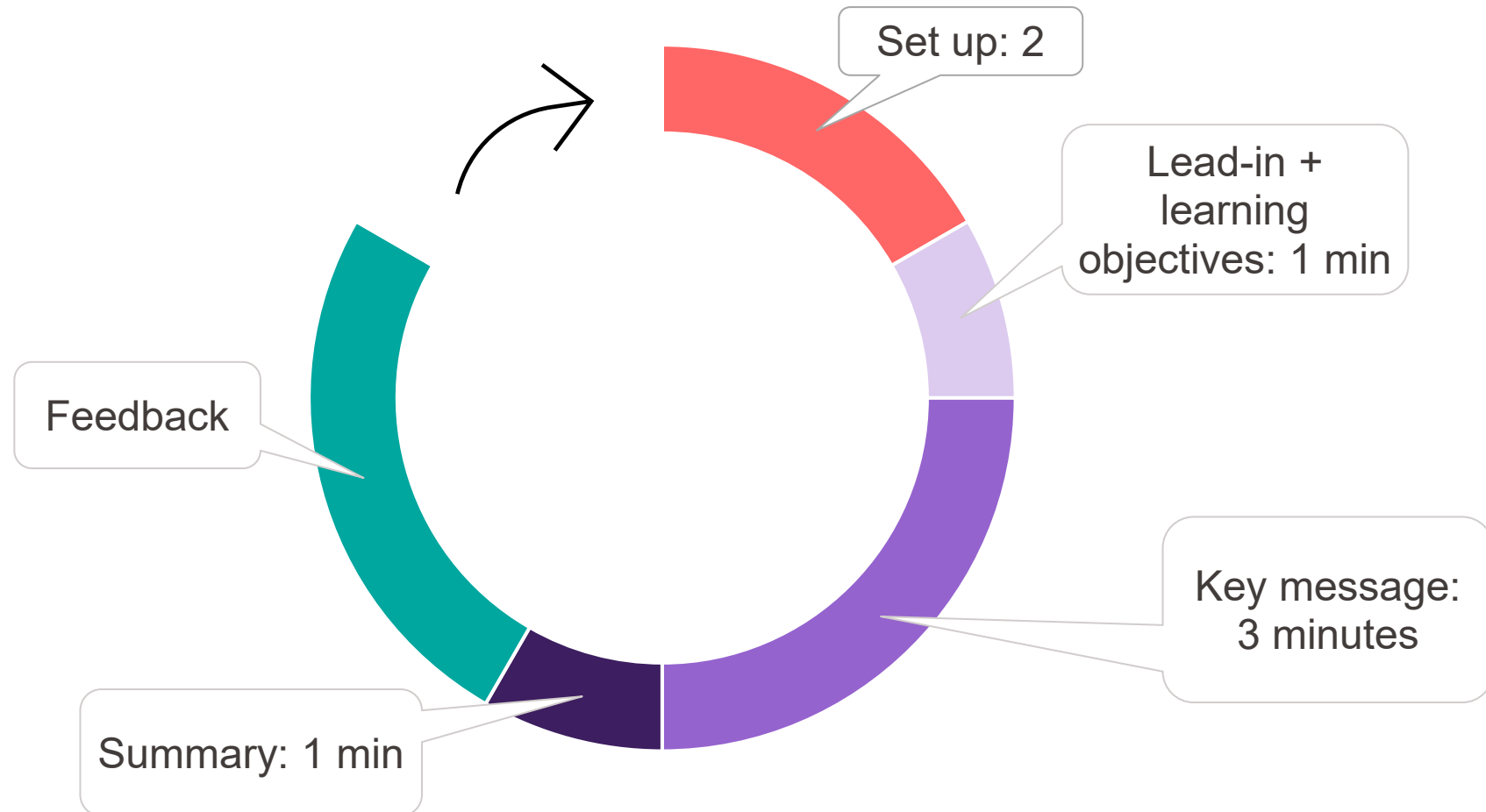
Mapping the motivation for the course activities



A closer look at the mini-lesson



The cycle – what you will do



Student feedback form

- Quick 2 minute feedback to teacher
- About your personal experience

1: Strongly disagree – 5: Strongly agree

	1	2	3	4	5
Lead-In					
The introduction connected to my previous knowledge					
The introduction motivated me to actively engage in the lesson.					
Learning Outcomes					
I understood what I was supposed to know/be able to do at the end of the 15 minutes.					
Active Learning & Feedback					
I was actively thinking about the material					
I had opportunities to ask questions and get feedback on my learning					
I was passively listening for large parts of the lesson.					
Summary					
In the end, I had the opportunity to recap the main ideas/concepts/skills.					
Achieving Learning Outcomes					
I personally achieved learning outcome 1					
I personally achieved learning outcome 2					
I personally achieved learning outcome 3					

Explore the Feedback form

Please discuss:

1. What are the questions on the feedback form asking you?
2. Why do you think they were included?

Group task

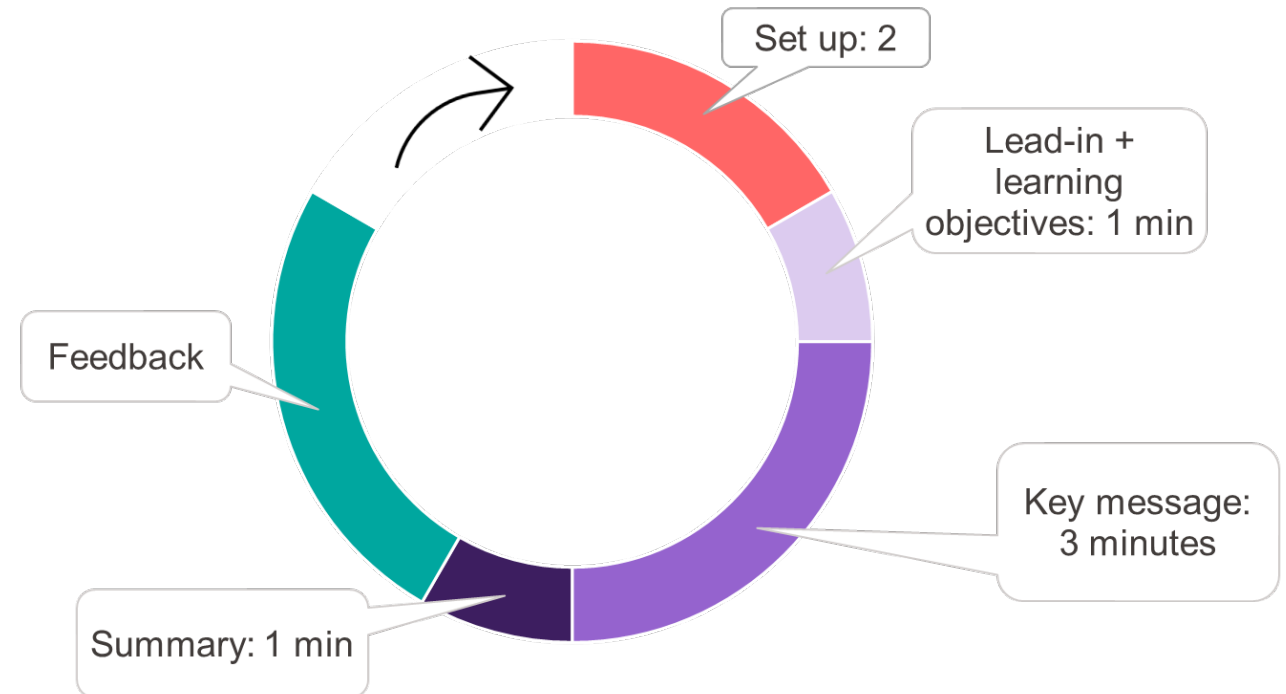
 ~ 8 mins

Goal:

Come to a common understanding of the items and their rating within your group

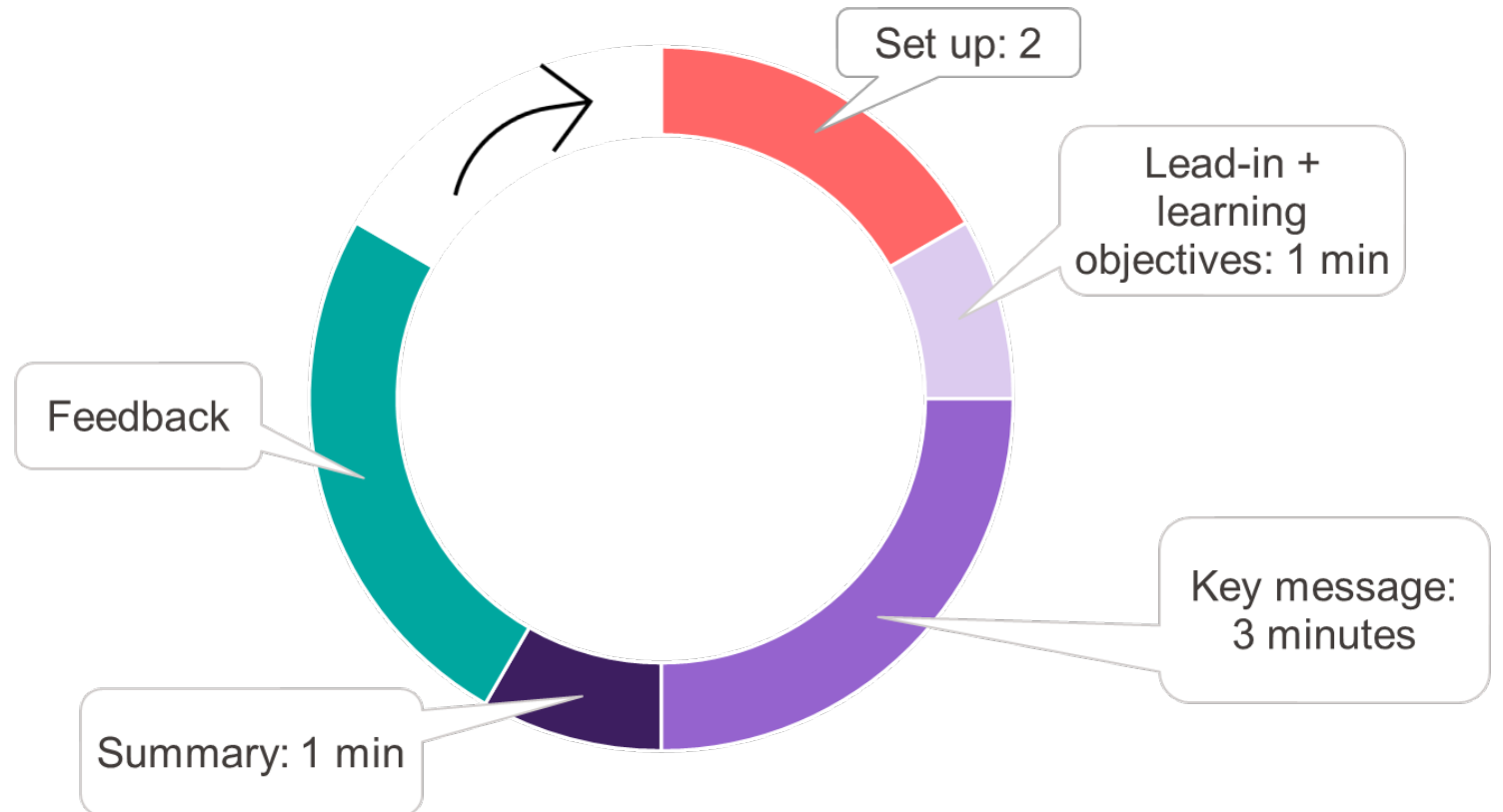
It is important to give feedback to the teacher

- Each “student” fills a feedback form
- Once you have filled it in, hand it to the “teacher”
- To facilitate getting useful feedback, your **last slide should repeat your learning objectives.**



You will teach your 1st mini-lessons today!

- Each one will teach a mini lesson in your groups:
 - 4/5 cycles of 10 mins each
 - 5 mins lesson
- Distribute roles



3 main roles

Teacher

1. Faciliates their lesson, per lesson plan

Video recorder

1. Writes down the presentation order of all lessons BEFORE the first one
2. Sets up camera to record each lesson in stable frame which captures interactions. **Please stop camera before feedback.**

Time keeper

1. Holds schedule.
2. Enforces timing for each step, especially transitions and overall limits.
3. Redistributes roles as required to release lesson instructor.

equipment

Board, projector, handouts...

equipment

ipad + stand

equipment

1. Lesson cycle illustration
2. Time keeping device

Small Group Warm Up

Group Bach *stays here	Group Wagner MED22423
Alexander	Enguerran
Antoine	Gaëtan
Louis	Mac
Marco	Manel
Serhat	Shima

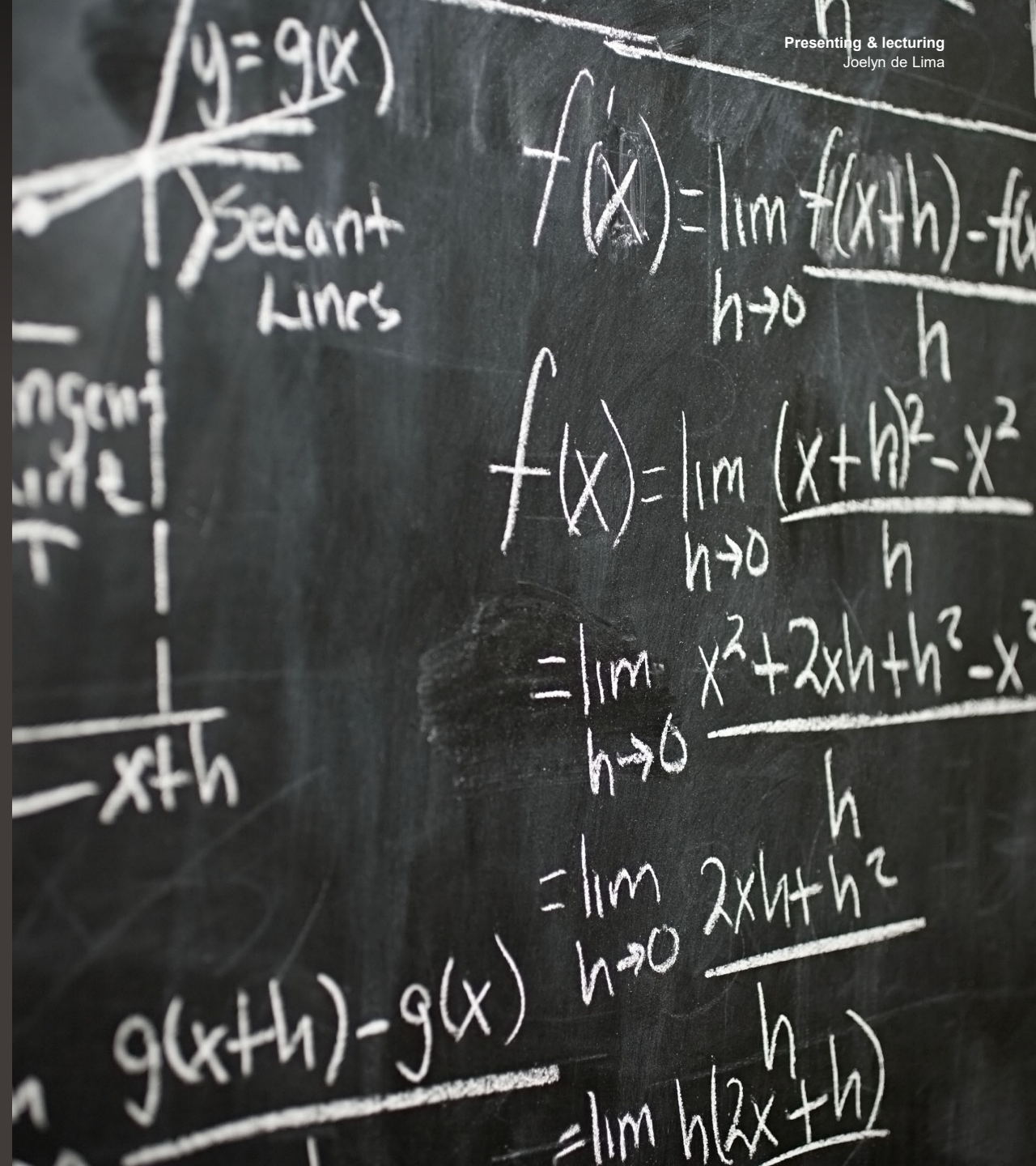
1. Re-introduce yourselves + share 1-2 personal development goals you have for this course
2. Collect the equipment and move to your room
 - Group folder
 - Video equipment
3. Teach your Day 1 lessons, per lesson cycle (video, feedback sheets)
4. Meet back here at 12.15 for the morning wrap up

Morning reflection:

- Deliberate practice builds expertise.
- Deliberate practice requires identifying your specific goals and the steps you will take to reach them.
- Please answer the questions pertaining to the morning on the “Daily Reflection” handout
- You hand in this document at the end of each day + receive instructor feedback



Structuring your class





Structuring your class

Learning Objectives

At the end of this presentation, you should be able to:

- **Structure** your lectures/presentations **to support learning**
- Explain **how we process and learn** new information according to the work by Baddeley & Hitch and Miller
- **Choose, design and use** supports to convey your message effectively





Identify key points

List 1-3 important points that you would like your audience to remember in your mini-lesson:

-
-
-



Helping your audience to focus

Contrast

Body language

Supports



Photo by Jacob Lund Photography from Noun Project

ATTENTION : Si Verbe + infinitif

1) Le participe passé, suivi d'un infinitif, s'accorde avec son COD placé avant **si le COD fait l'action exprimée par le verbe à l'infinitif.**

« *Les oiseaux que j'ai entendus chanter* » = *j'ai entendu [les oiseaux qui chantent]*

Les oiseaux est COD de *entendre*, sujet de *chanter* ↔ accord au verbe *entendre*

2) Le participe passé, suivi d'un infinitif, ne s'accorde pas avec le COD placé avant **si le COD subit l'action exprimée par l'infinitif.**

« *La chanson que j'ai entendu chanter* = *j'ai entendu [chanter la chanson]*

La chanson est COD de *chanter* ↔ pas d'accord au verbe *entendre*

3) **Jamais accord pour « fait » + infinitif** même sous forme pronominal : il fait corps avec l'infinitif et constitue avec lui **une périphrase factitive.**

« *Les amis qu'il a fait entrer.* » et « *elles se sont fait prendre* »

Text

Space draws attention

- Use a legible font
- Adapt the font size
- Write short key phrases

Pharmacologie concepts de base

Pharmacodynamique

Agonistes allostériques

(liaison à un site différent de ce qui lie l'agoniste endogène)

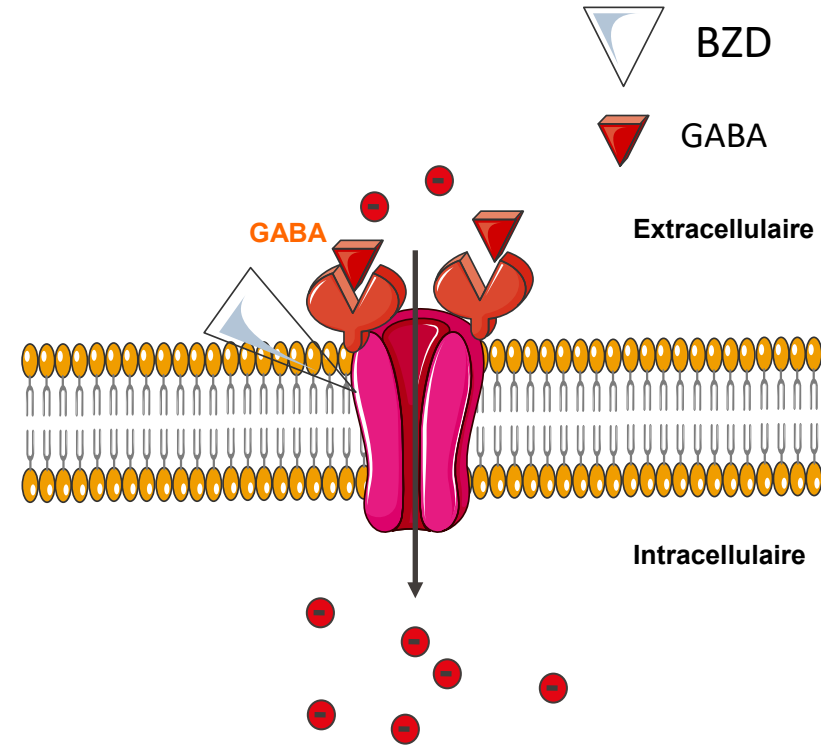
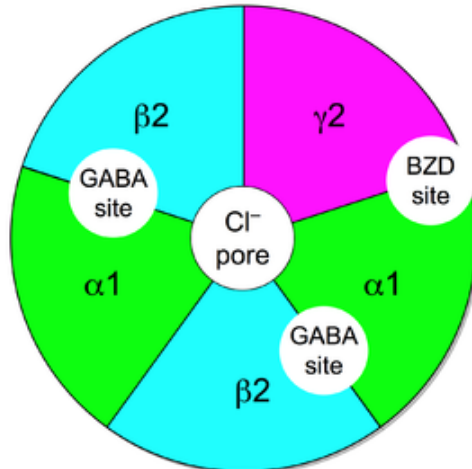
Exemple : le récepteur $GABA_A$



Agoniste endogène

Médicament

Il est perméable aux ions Cl^- qui produisent une hyperpolarisation du potentiel de membrane (action inhibitrice)



Les benzodiazépines (BZD) augmentent la perméabilité du récepteur $GABA_A$

Effet sédatif (ex diazépam « Valium ») et antiépileptique

Colors

Contrast improves readability

- ≤ 3 colors
- Check how they render
- Check:
 - Accessibility
 - Meaning
 - Consistency

- ≤ 3 colors
- Check how they render
- Check:
 - Accessibility
 - Meaning
 - Consistency

Information processing





Information processing

The **working memory** is the cognitive system that **holds** and **processes new information** as that information comes through your senses.

A common model includes 4 components:

- The **phonological loop**, which deals with verbal information
- The **visuospatial sketchpad**, which deals with visual information
- The **episodic buffer**, which integrates information and links with time sequencing
- The **central executive**, which controls and regulates the cognitive processes



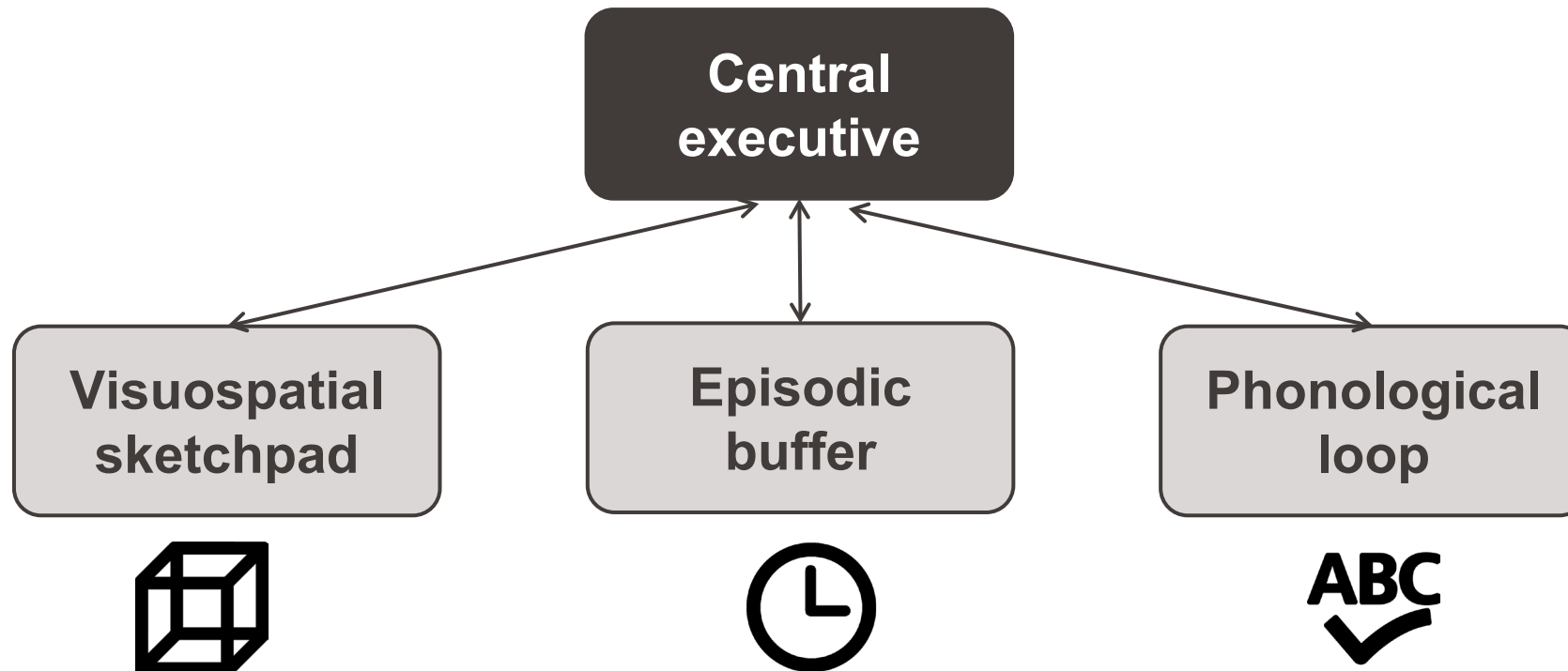
How did you process the previous slide?

- A. Read then listened / Listened then read
- B. Read only / Listened only
- C. Read + listened at the same time



Information processing

Working memory =
cognitive system that **holds** and **processes new information**





How do you support your message?

- Use **visuals** (diagrams, graphs, icons, tables, pictures...) in **combination** with text
- Ensure that your oral and written messages are **consistent**



Using visuals

Go back to your three key points:

- Think of at least one visual that you can use to complement one of the key ideas
- (diagrams, graphs, icons, tables, pictures ...)

Memorisation



Limitation of the working memory

- Very short - Approx. 1 minute,
- Can hold only a **limited number of 'chunks'** – 7 ± 2

Memorisation = Encoding

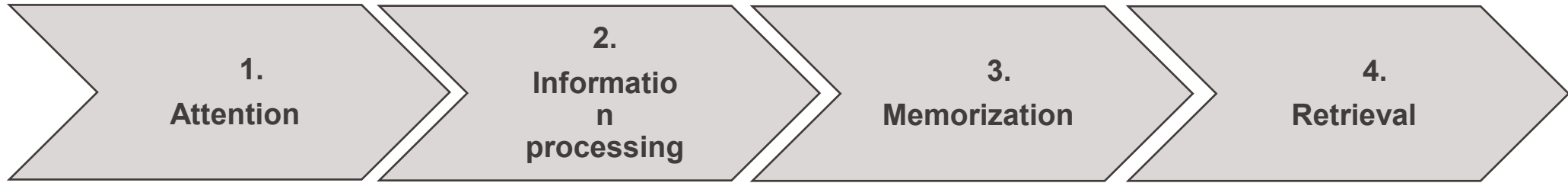
- Efficient memorisation = encoding information
- Encoding is facilitated by **making associations**:
 - With new information
 - With existing information



Practices which support memorization

- Limit the **quantity** of simultaneous information
- Make sure students **actively process** information
- **Organize** information using an explicit structure

Structuring information





Using an explicit structure

How are the different pieces of information / concepts / messages / ideas contained in your presentation **related to each other**?

- Create a “map” that you could use in your presentation (visual if possible)
- Get inspiration from your colleagues:
how could you improve your own structure?
- Share great practices you have seen in others’ work

Structure vs. Flow

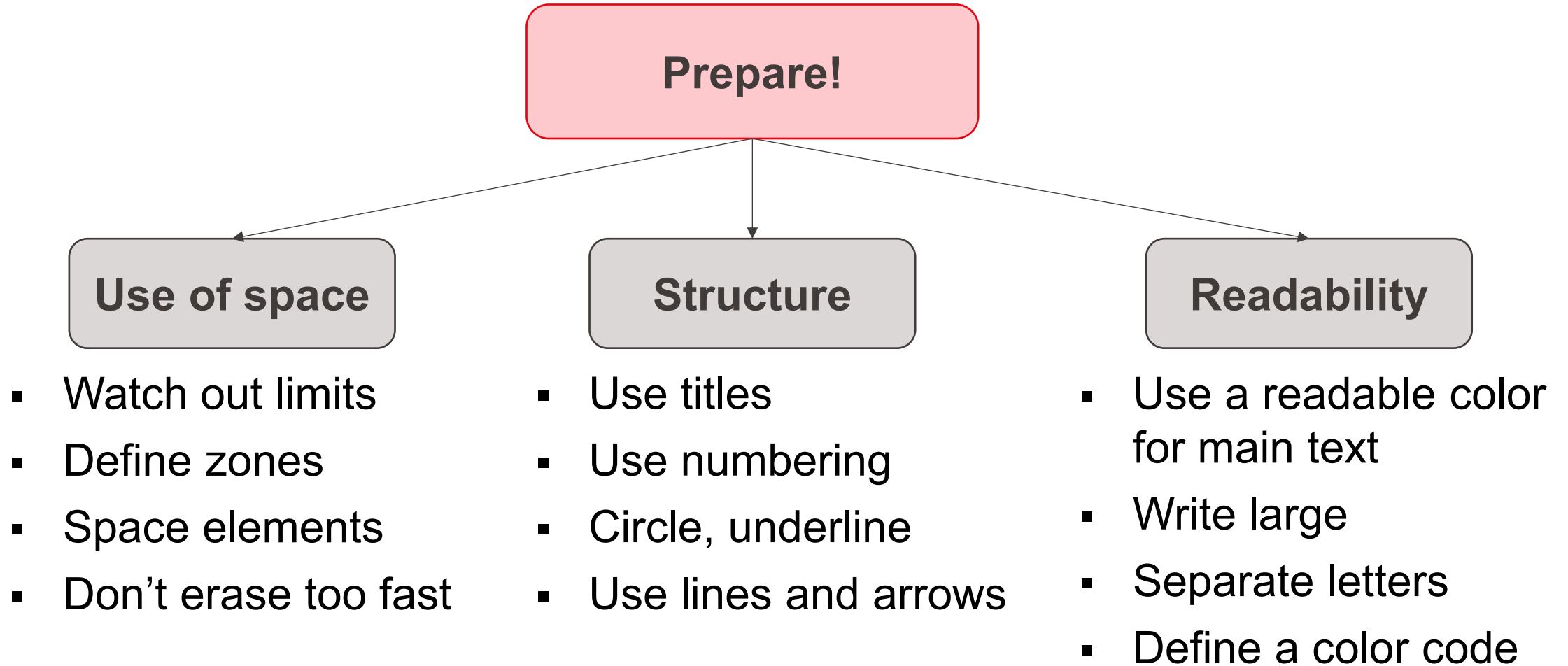


A lecture/presentation is **linear** by definition.

How to **make its structure visible**?



Best practices for using a board





Preparing for using a board

- Prepare a one page “on-the-board” summary presentation of your thesis, thinking about use of space and structure
- Show your page to your neighbour – without explaining the content – and give each other feedback:
 - How is space used?
 - Is the structure identifiable?
- Share great practices you have seen in others’ work



Check your learning so far

- Draw the **model of the working memory** presented in this lesson

- List practices that can be used in lectures/presentations to:
 - Draw attention:
 - Make information processing easier:
 - Facilitate memorization:

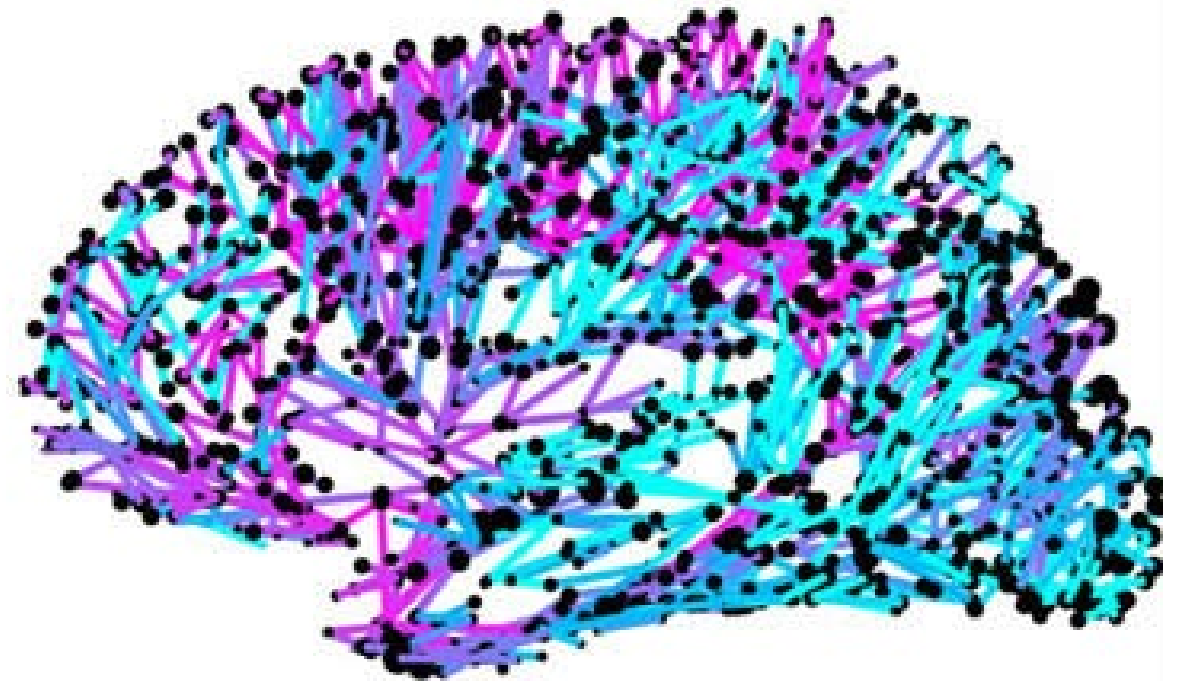
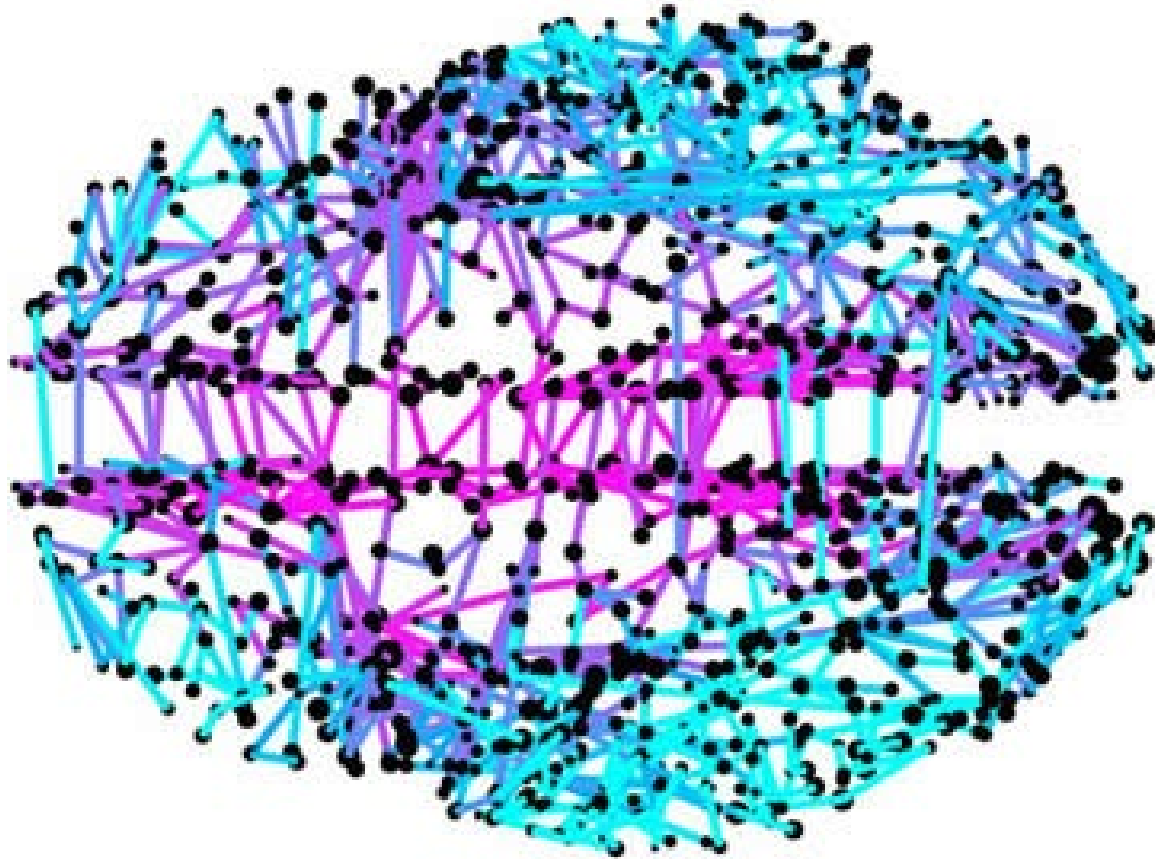
Memorisation



Retrieval



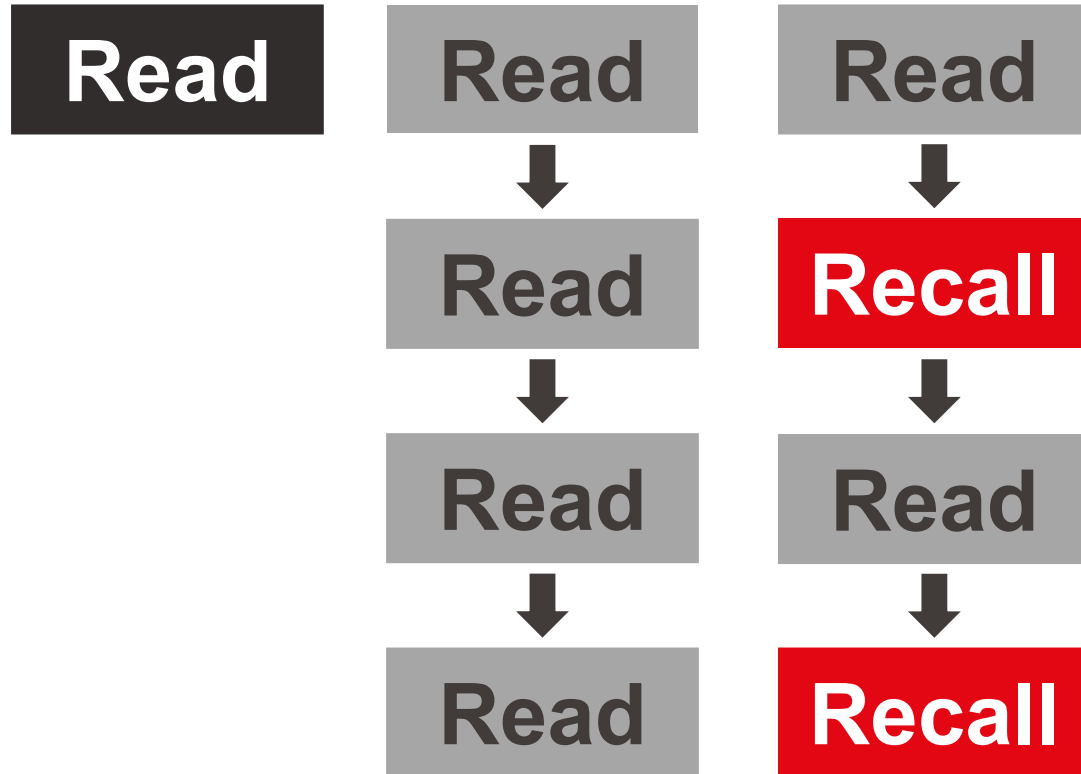
Retrieve = reconstruct



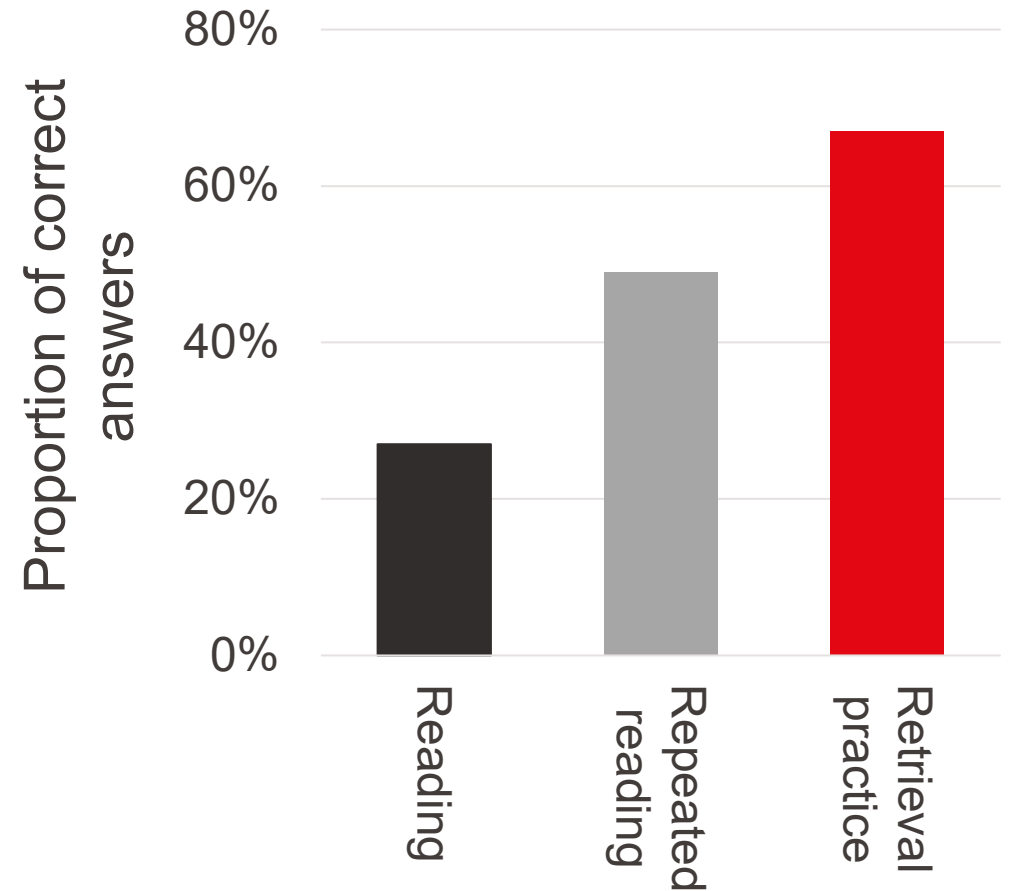
Times at which different connections in the brain are used to spread information.

early  late
time of use

Impact of retrieval practice on learning



Results on comprehension test





1.
Attention

- Use **contrast** in supports and body language
- **highlight** important points

2.
Information
processing

- Use **visuals + text**
- **limit the quantity** of simultaneous information

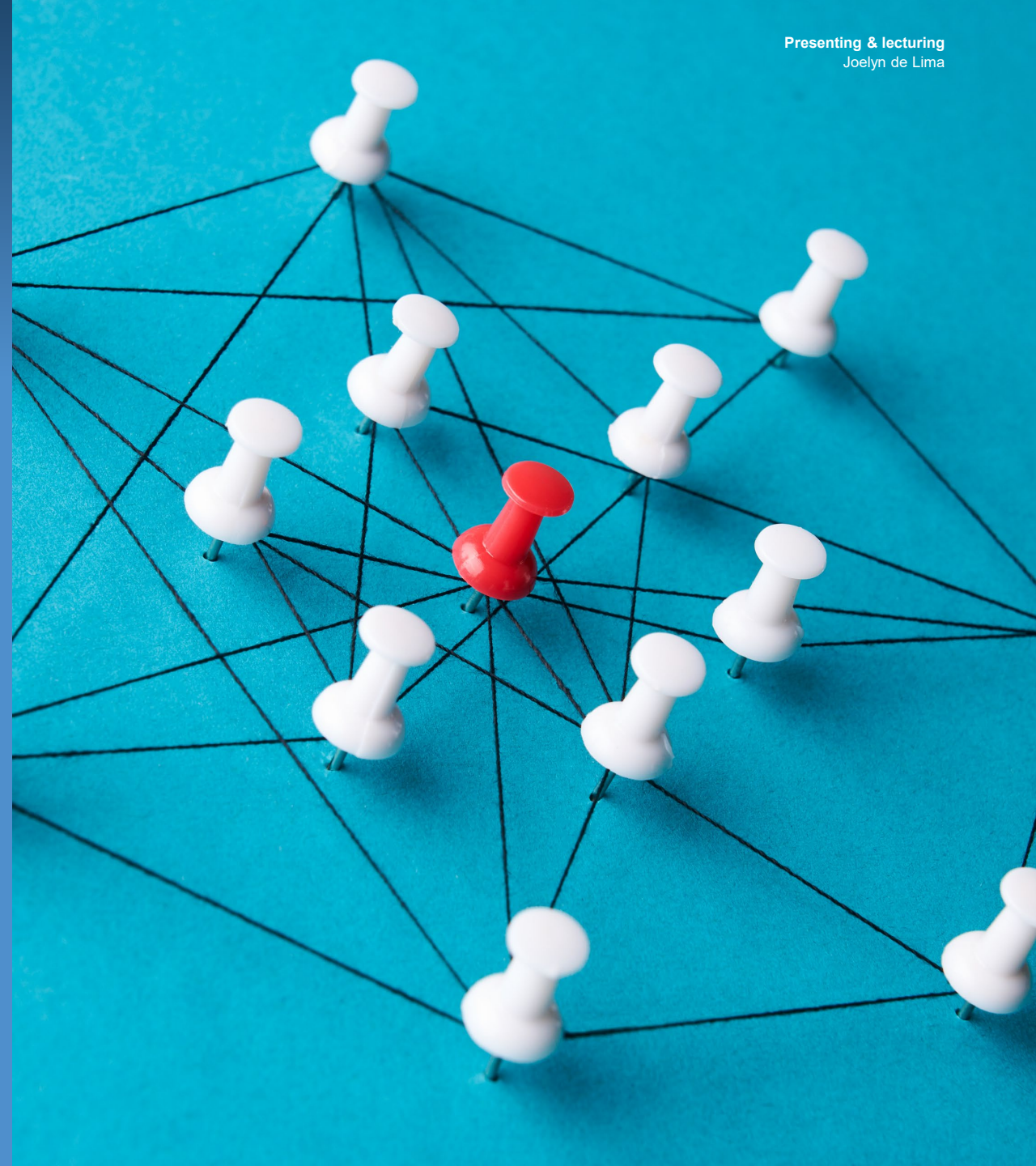
3.
Memorization

- **Organize** information using an **explicit structure**
- **Make connections** with prior knowledge

4.
Retrieval

- Have students **practice retrieval**

How did I structure my lesson?





Learning Objectives

At the end of this presentation, you should be able to:

- **Structure** your lectures/presentations **to support learning**
- Explain **how we process and learn** new information according to the work by Baddeley & Hitch and Miller
- **Choose, design and use** supports to convey your message effectively



Use LOAFS

**L**

Lead-in

**O**

Objectives

**A**

Active-processing

**F**

Formative assessment

**S**

Summary

How was the lesson structured? (L)

- L: Lead-in

What leads to student success?

On the handout in front of you:

- Select the 5 aspects or strategies that you think are most likely to lead to student success.

} Individual task
🕒 ~ 2 mins

How was the lesson structured? (O)

- L: Lead-in
- O: Objectives

Learning objectives

By the end of this lesson, you will be able to:

- Analyse evidence underpinning high-impact teaching and learning aspects & strategies
- Identify strategies that enable the teacher to positively impact student success

How was the lesson structured? (A)

- L: Lead-in
- O: Objectives
- A: Active learning

What does the evidence support

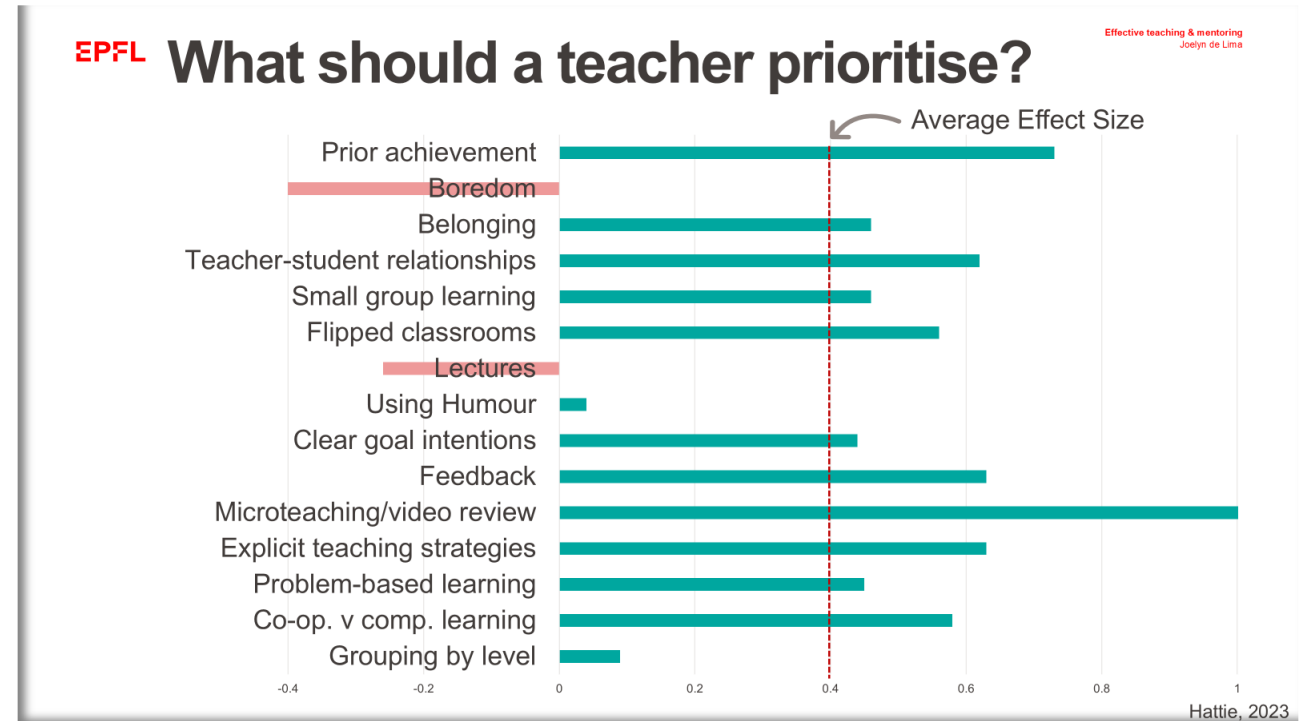
Discuss the following questions with reference to the given table:

- What data does the table provide?
- What claim can you make based on the data in the first row?
- Based on the whole data, identify 5 things that a teacher should prioritise

Group task
🕒 ~ 5 mins

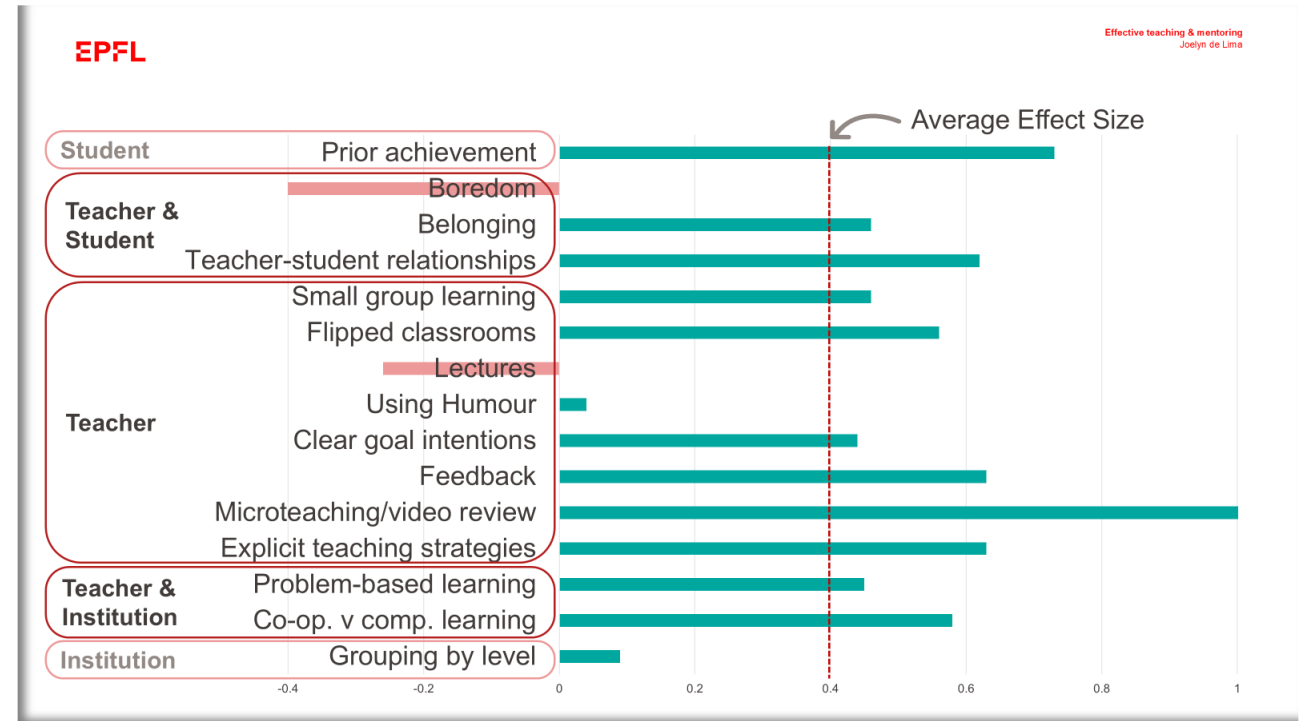
How was the lesson structured? (F)

- L: Lead-in
- O: Objectives
- A: Active learning
- F: Formative assessment

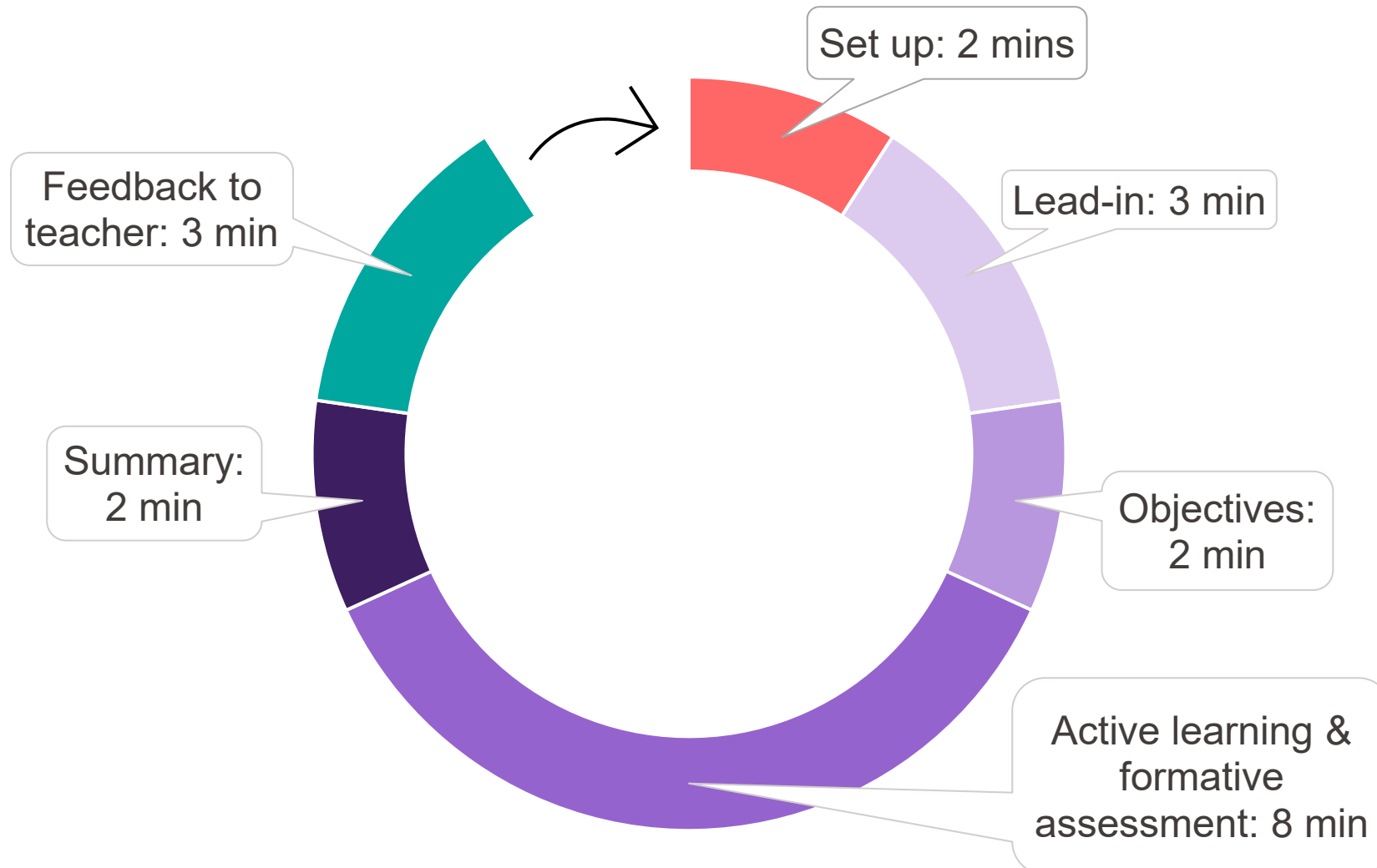


How was the lesson structured? (S)

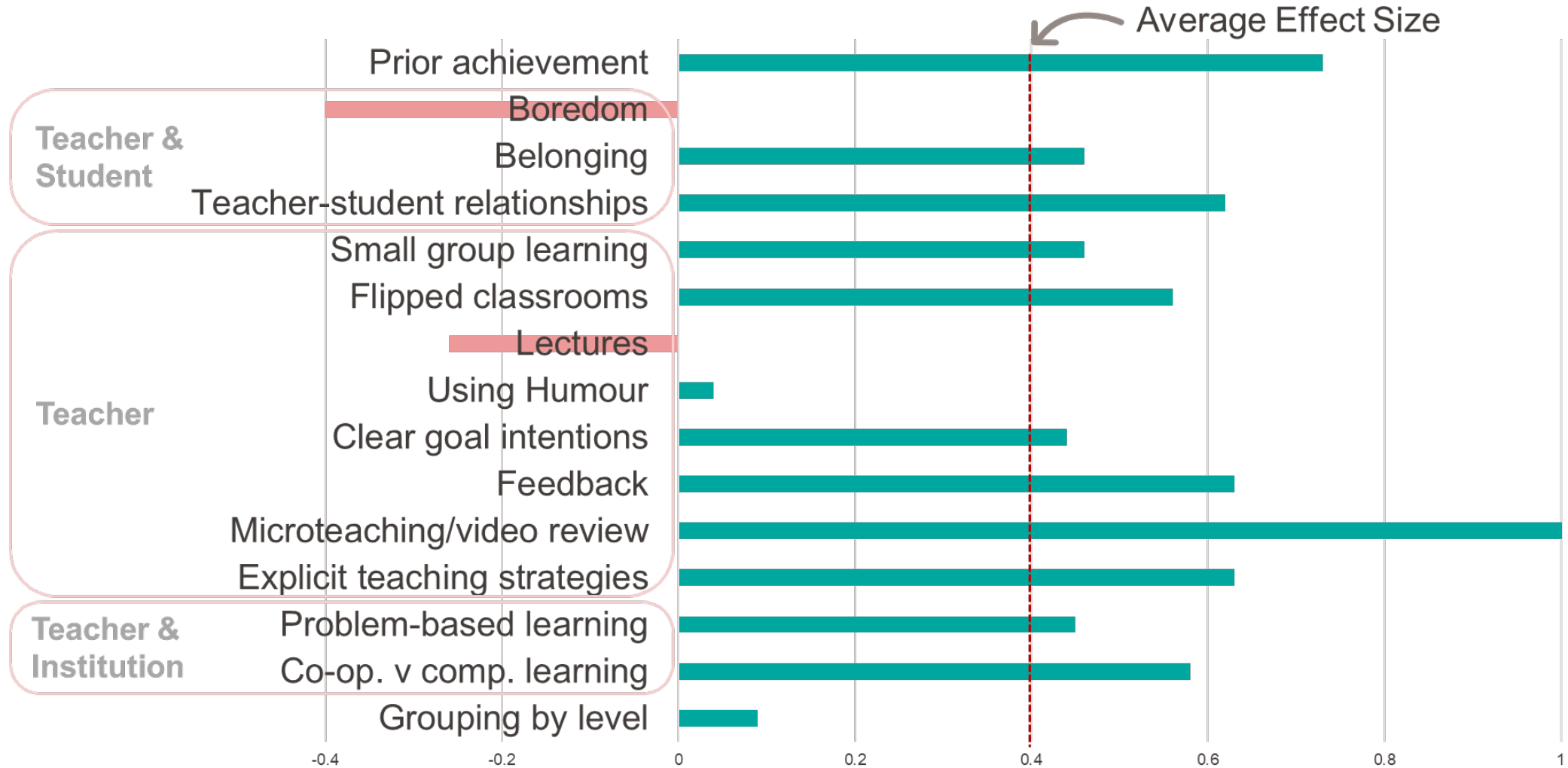
- L: Lead-in
- O: Objectives
- A: Active learning
- F: Formative assessment
- S: Summary



The whole lesson cycle




See you back in 15 mins!



LOAFS case studies


- Group 1: Start the activity **6.1.c**
- Group A: Start the activity **6.3**



Working alone
 ~ 5 mins


- As a group, share your work and complete the task together



Group task
 ~ 5 mins

- Form a new group, with max 2 members from each initial group
- Explain the activity you completed, taking care to describe your thinking and process behind your work



Group task
 10 mins



skills



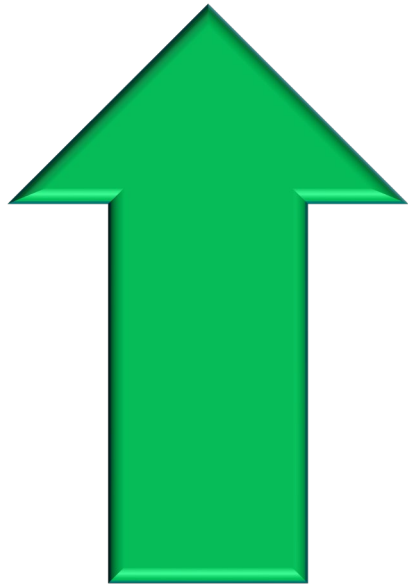
content

learning



teaching

skills



content

**Learning
objectives**

specific statements of
what students should be
able to **DO** after the
course

a Learning Objective

is a clear, concise statement of what a student should be capable of doing at the end of the instruction period.

Criteria

- Focused on student action, i.e. verb
- Important
- Observable
- Challenging
- Obtainable

1. Ramsden, P (2003) *Learning to teach in Higher Education*, London Routledge

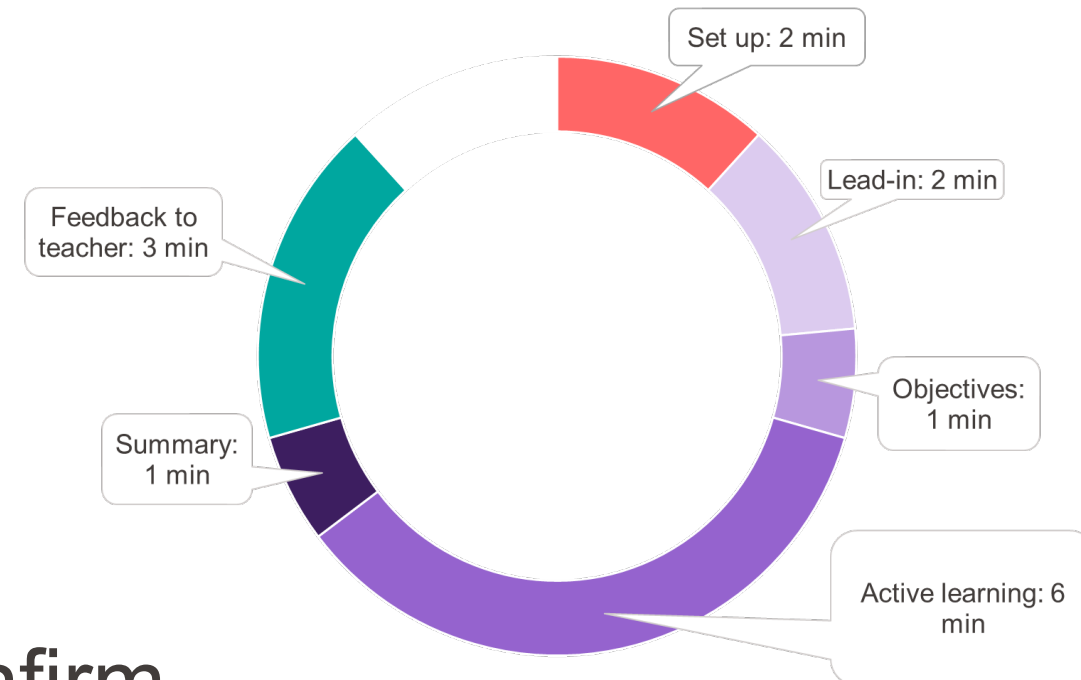
2. Jenkins, A. & Unwin, D. *How to write learning outcomes* www.ncgia.ucsb.edu/education/curricula/giscc/units/format/outcomes.html

Verbs to Avoid for Learning Objectives

- Understand
- Familiarise
- Recognise
- Appreciate the importance
- Express in words
- (re)activate
- Comprendre
- Prendre connaissance
- Reconnaître
- Sentir les bien-fondés
- Exprimer avec des mots
- (re-)activer ...

What you will do tomorrow

- Everyone teaches a lesson in your group:
 - 10 mins teaching time
- Lesson details
 - Choose an exercise or problem-solving activity
 - Use the Day 2 lesson planning matrix
 - Only blackboard or paper flipcharts (No Powerpoint)
 - Ask questions of your participants!



-> Take a moment to choose, confirm what you will teach tomorrow

Activity: Constructing Learning Objectives

Step 1 creating (5 min)

- For the topic of the lesson you will teach tomorrow, identify a key concept that students will learn
- Translate this into a LO using an action verb
 - By the end of this session project, you must be able to...
 - By the end of this lesson, you should be able to...

Activity: Constructing Learning Objectives

Step 1 **creating** **(5 min)**

Step 2 **poster** **(2 mins)**

- Each person writes their learning objective on the poster paper.

Activity: Constructing Learning Objectives

Step 1 **creating** **(5 min)**

Step 2 **poster** **(2 mins)**

Step 3 **rotation** **(3 mins)**

- Pass your poster clockwise to a neighbour
- Working individually, read your neighbour's work + provide feedback based on the criteria

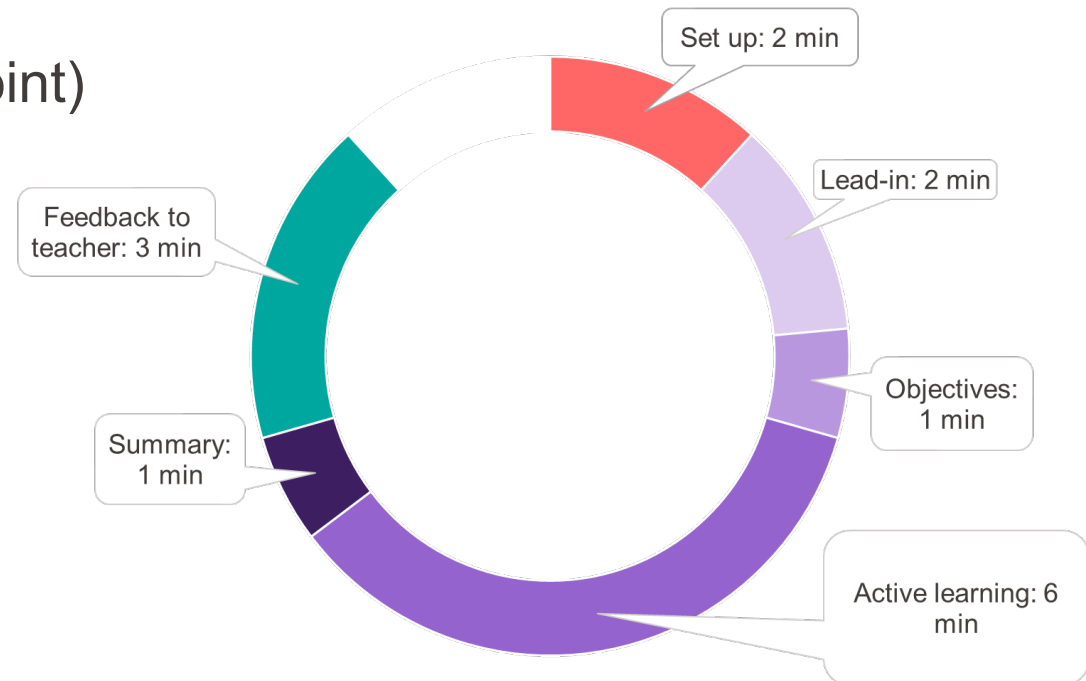


Write <u>your learning outcome here</u>	Focused on student action		Measurable		Contextualised	
	<u>insufficient</u>	explicit	<u>insufficient</u>	explicit	<u>insufficient</u>	explicit

- Repeat

What you will do tomorrow

- Lesson details
 - Choose an exercise or problem-solving activity
 - Use the Day 2 lesson planning matrix
 - 10 minutes
 - Only blackboard or paper flipcharts (No Powerpoint)
 - Ask questions of your participants!
- Each lesson will be videotaped:
 - You will be analysing your videos – **this is microteaching!**
- Anonymous feedback on Moodle



Afternoon reflection:



- Deliberate practice builds expertise.
 - Deliberate practice requires identifying your specific goals, implementing actions, and evaluating your progress
1. Answer the questions pertaining to the afternoon on the “Daily Reflection” handout and hand it to Siara before you leave
 2. Finish preparing your lesson for tomorrow

See you tomorrow at 9:00 in ME D0 1418