

SCIENCE ^{OF} LEARNING

CONFERENCE 2025

PLATINUM SPONSORS



GOLD SPONSORS




Learning Trajectory - Surface, Deep, Adaptive

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PhD, MEd, BAMF



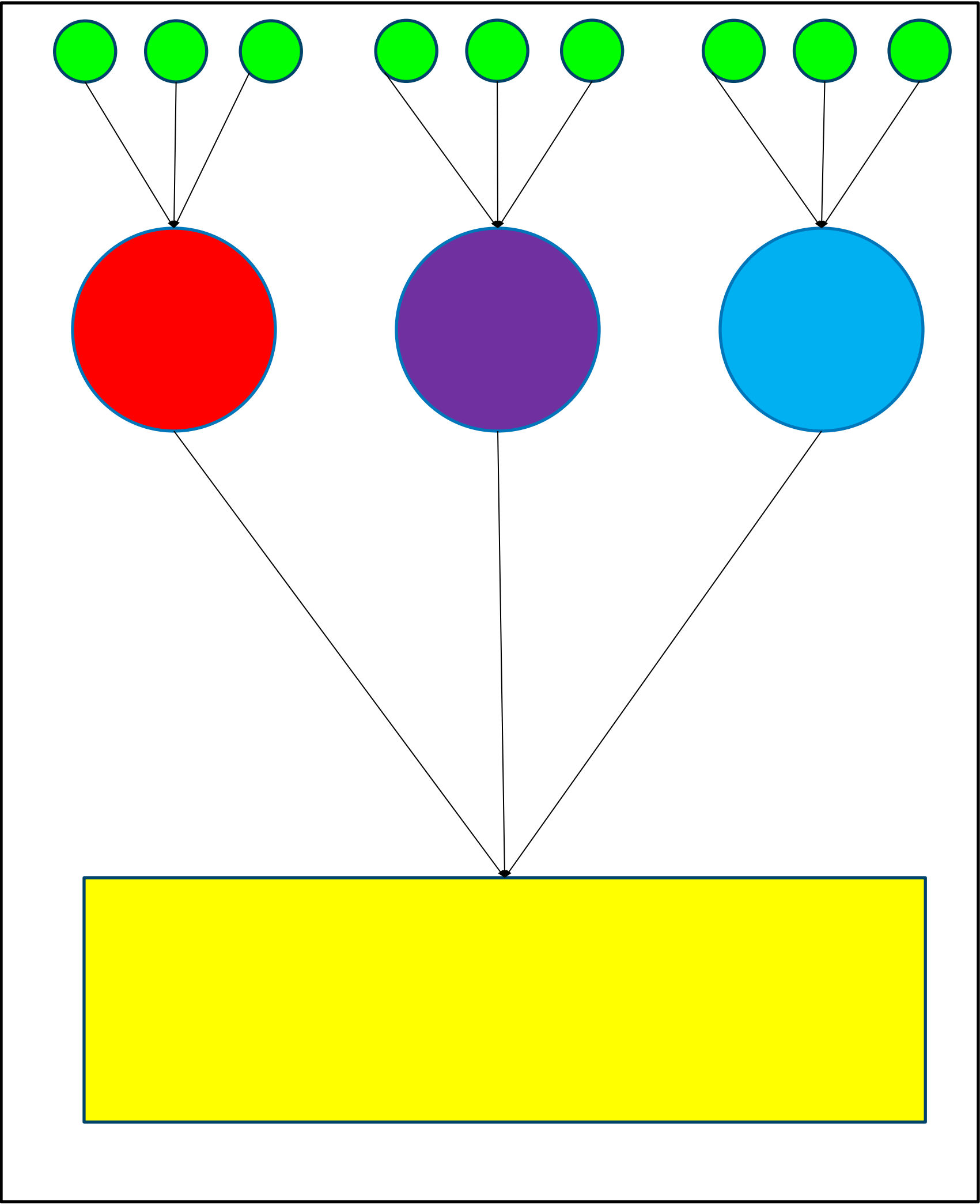


LME GLOBAL

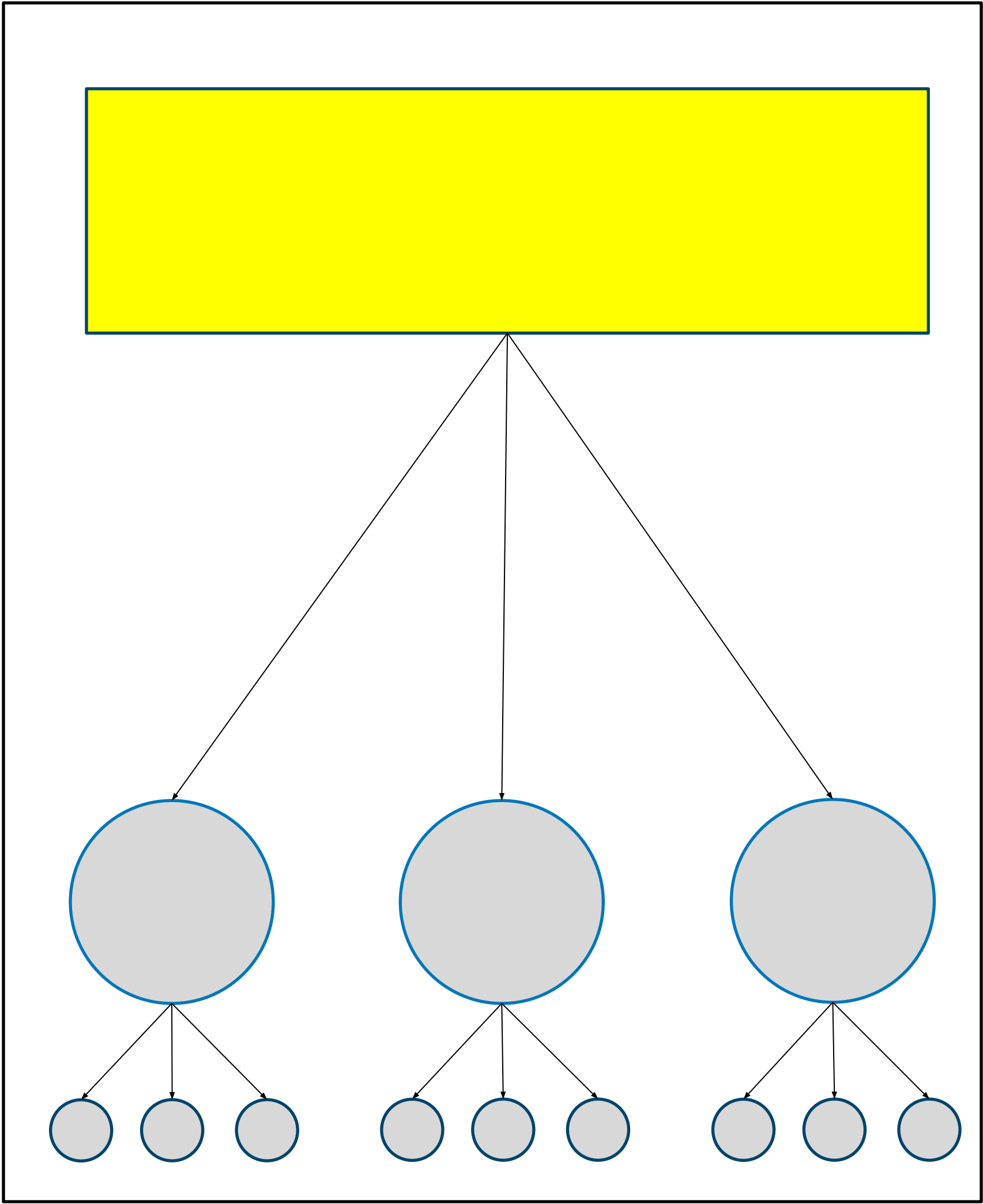
LEARNING MADE EASY



Novices



Experts

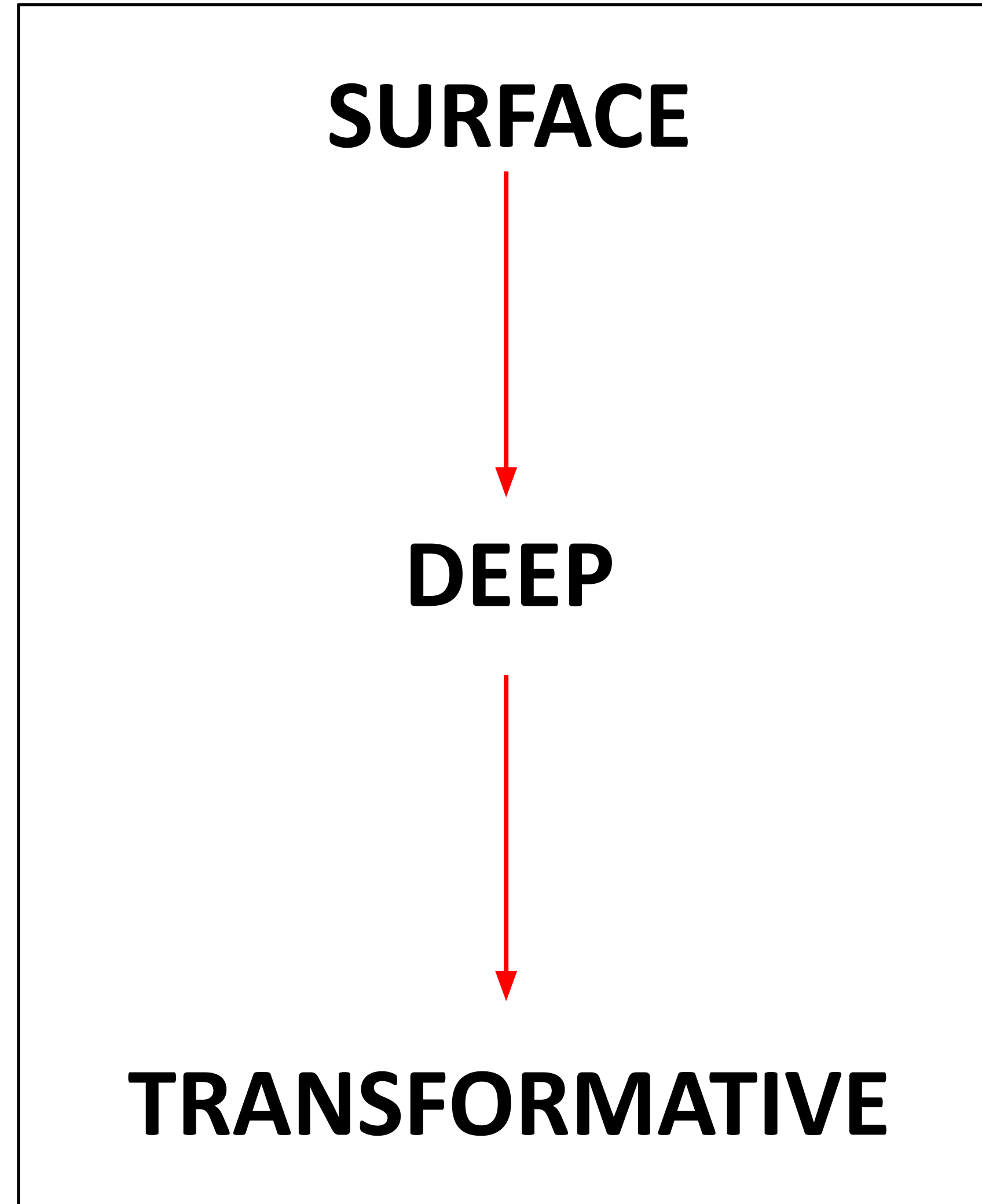


The Learning Trajectory

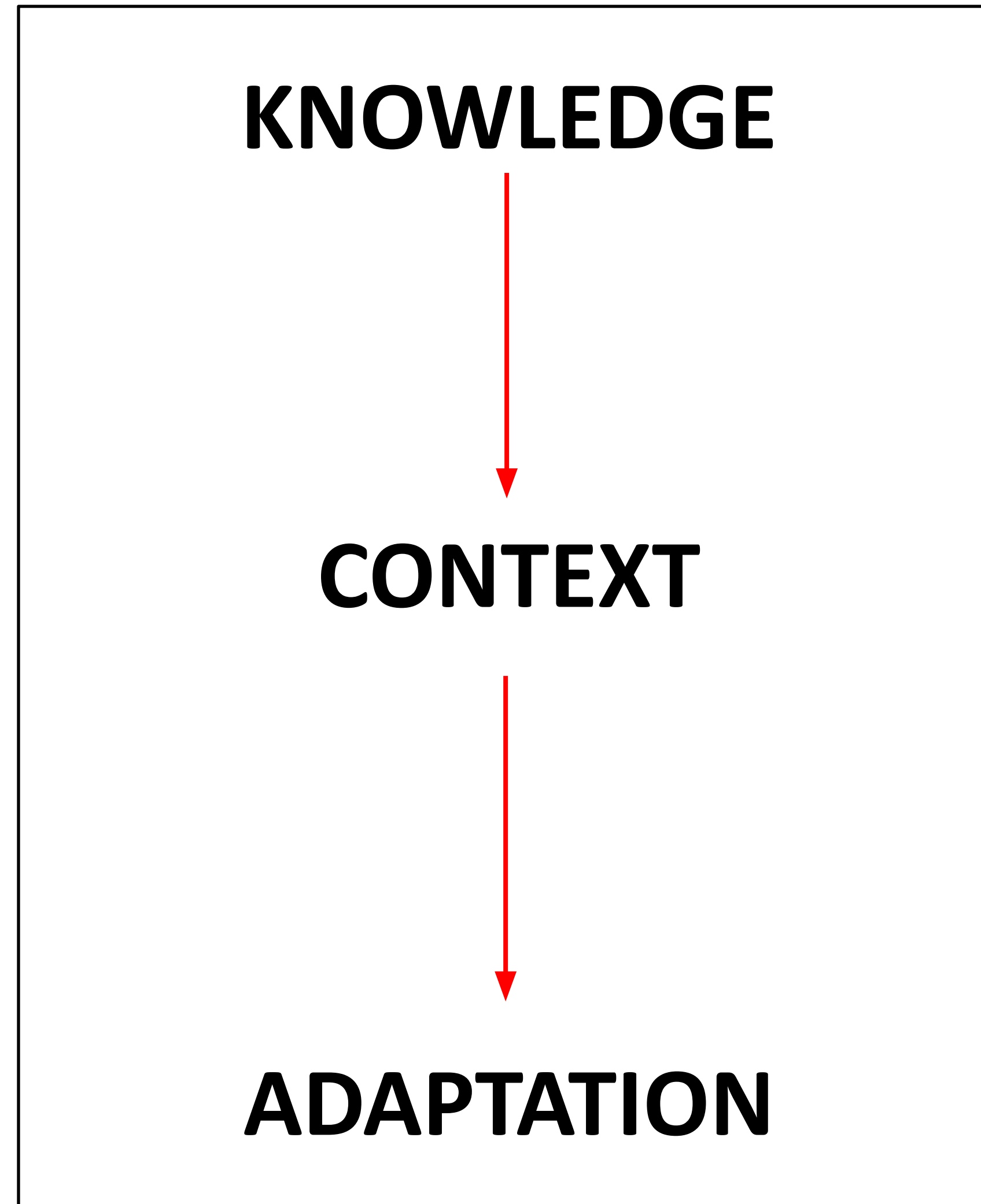


LEARNING

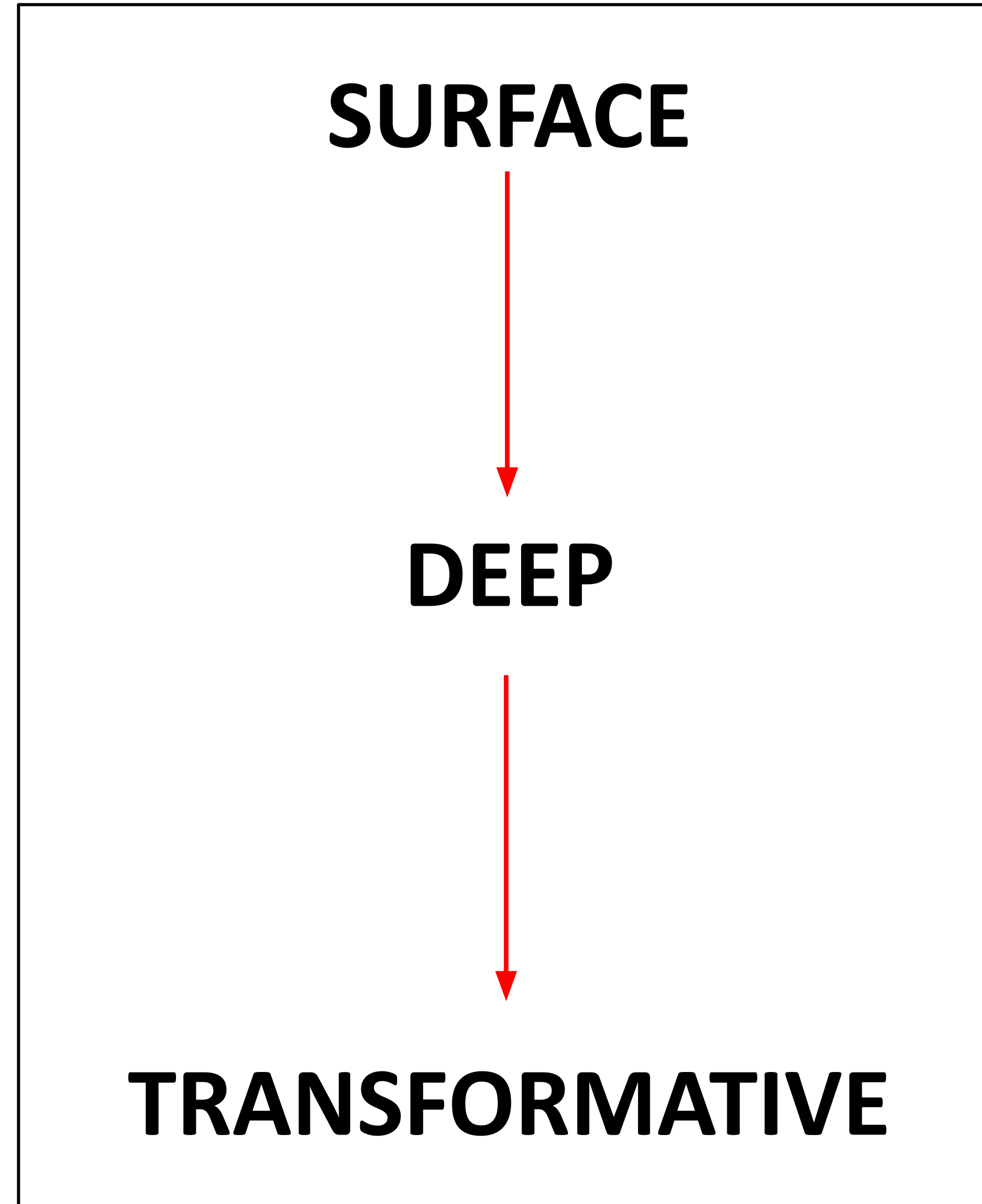
The Learning Trajectory



The Transfer Process



The Learning Trajectory



Architecture

Form First



Architecture

Form First



Architecture

Form First



Louis Sullivan

Form Follows Function



Louis Sullivan

Form Follows Function



Form Follows Function



Form Follows Function



Why Does this Matter?



FORM

What do I do?

FORM FOLLOWS FUNCTION

What do I want!?



Learning Objective

VERB



Learning Objective

Orally describe the steps involved in the scientific method.



Learning Objective

*Orally **describe** the steps involved in the scientific method.*



Learning Objective

*VERB MUST BE ACTIVE &
EXTERNALLY OBSERVABLE OR
MEASURABLE!*



FIND THE PASSIVE VERBS

MAKE

BE CONSCIOUS OF

ACCEPT

GRASP

SUMMARIZE

KNOW

MEMORIZE

ORGANIZE

PREDICT

DESCRIBE

UNDERSTAND

BE FAMILIAR WITH

DEFINE

VALUE

CALCULATE

APPRECIATE

ARGUE

INVENT

FIND THE PASSIVE VERBS

MAKE

BE CONSCIOUS OF

ACCEPT

GRASP

SUMMARIZE

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DEFINE

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ARGUE

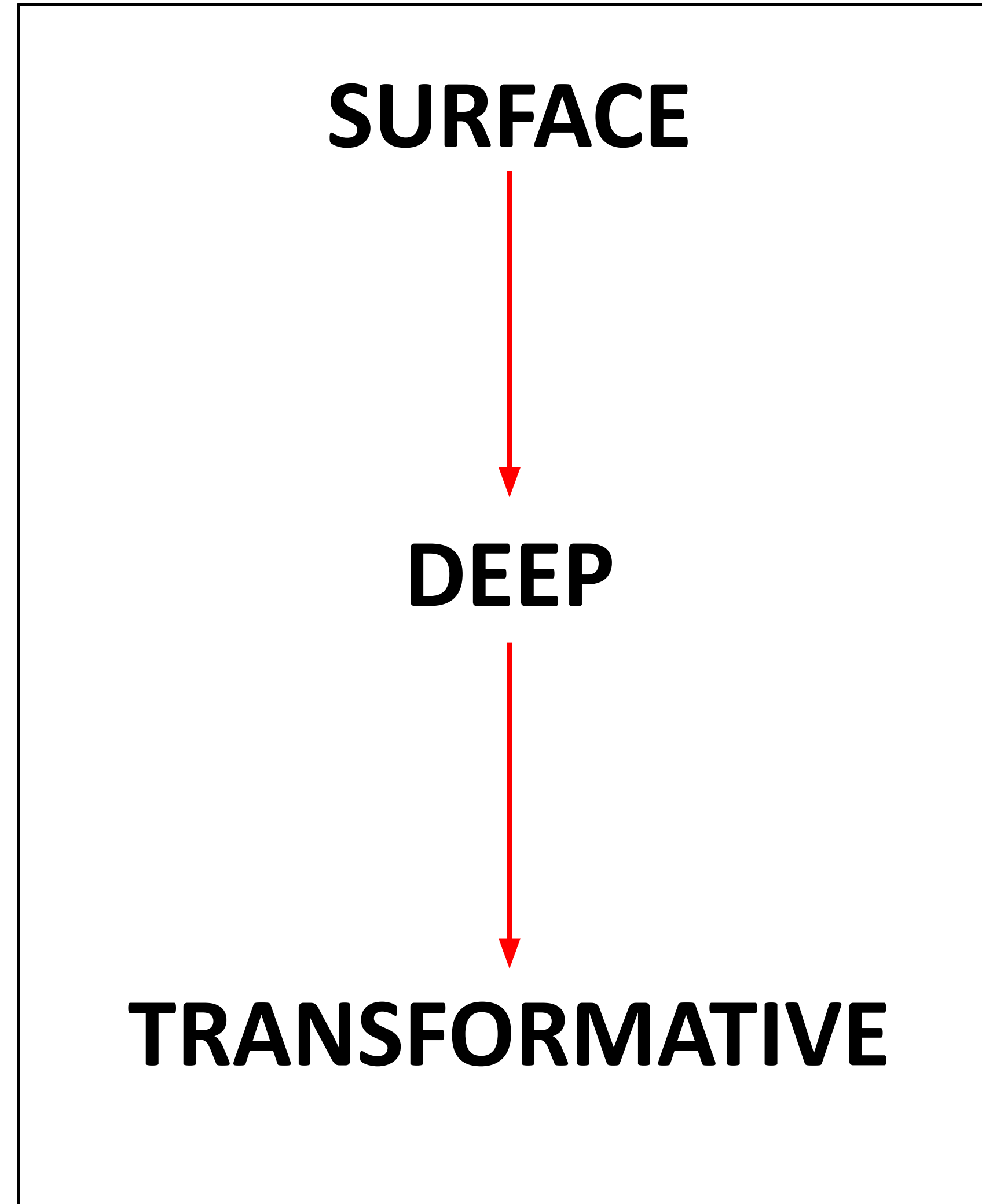
INVENT

Learning Objective

*Orally **describe** the steps involved in the scientific method.*



The Learning Trajectory



Basic Learning Process

Fact Retrieval (Surface)

Concept Formation (Deep 1)

Concept Shifting (Deep 2)

Concept Testing (Deep 3)

Transformative



A Quick Passage...



FACTS

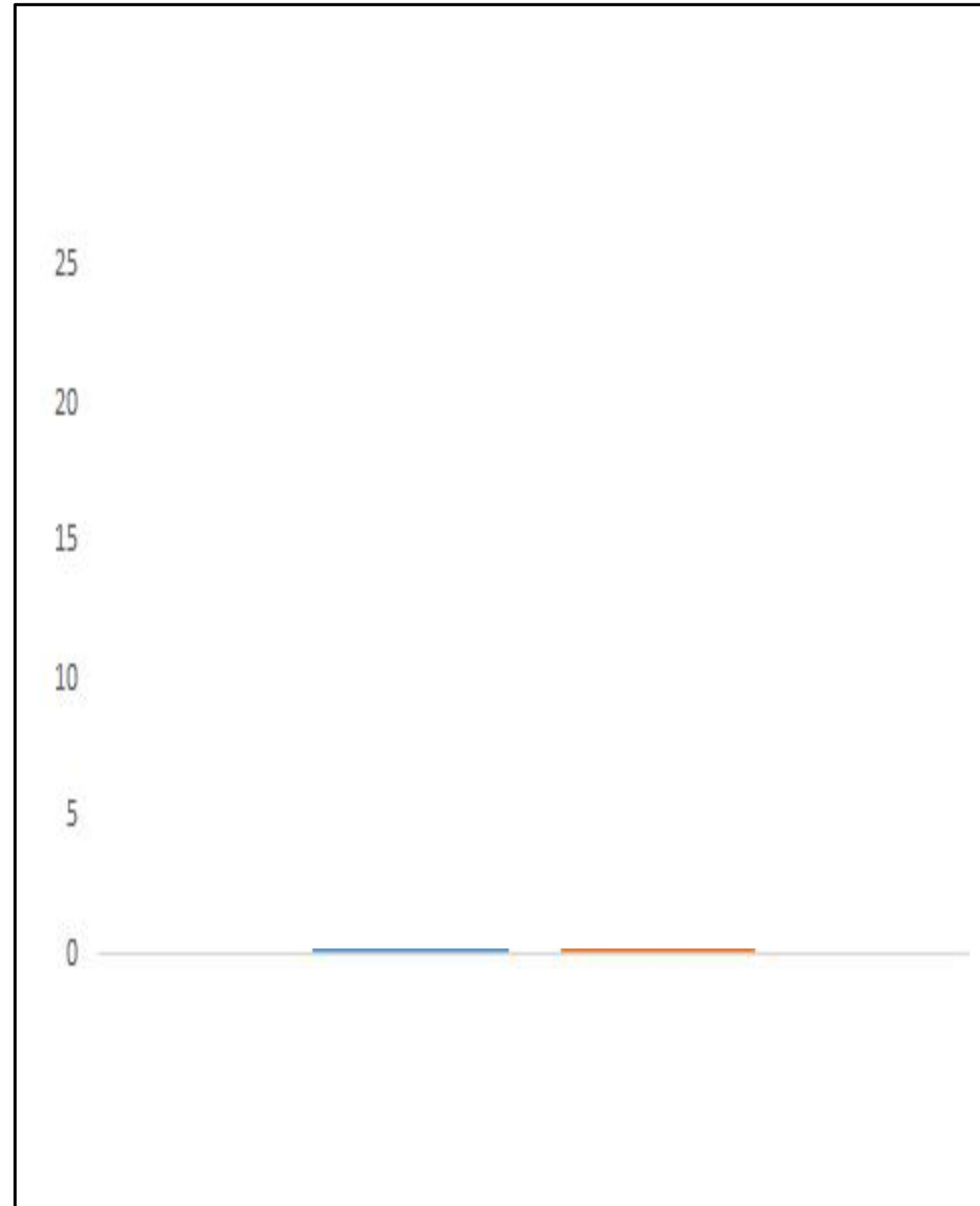
ALWAYS

PRECED

E

OWNS

A Quick Passage...



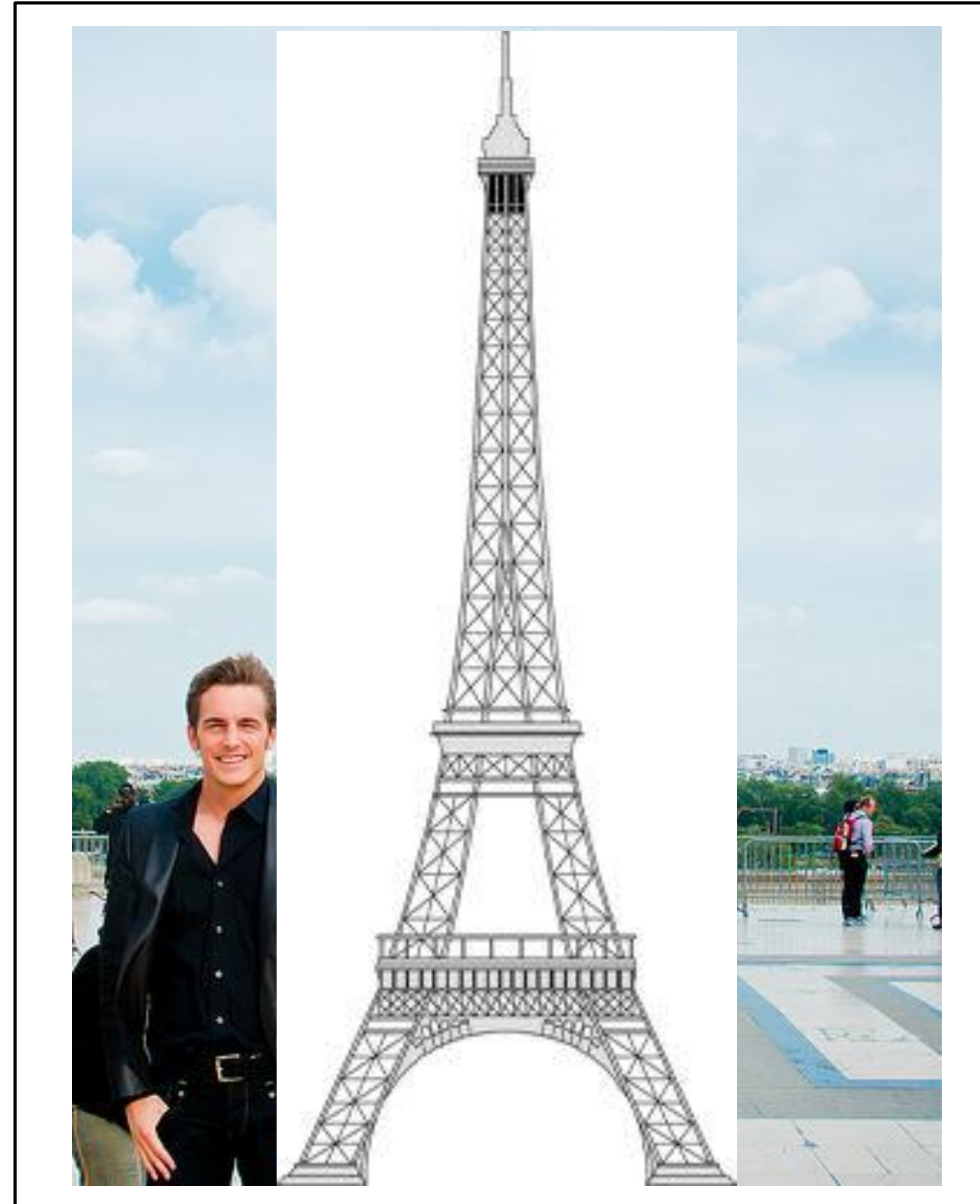
A Quick Passage...



Declarative Memory

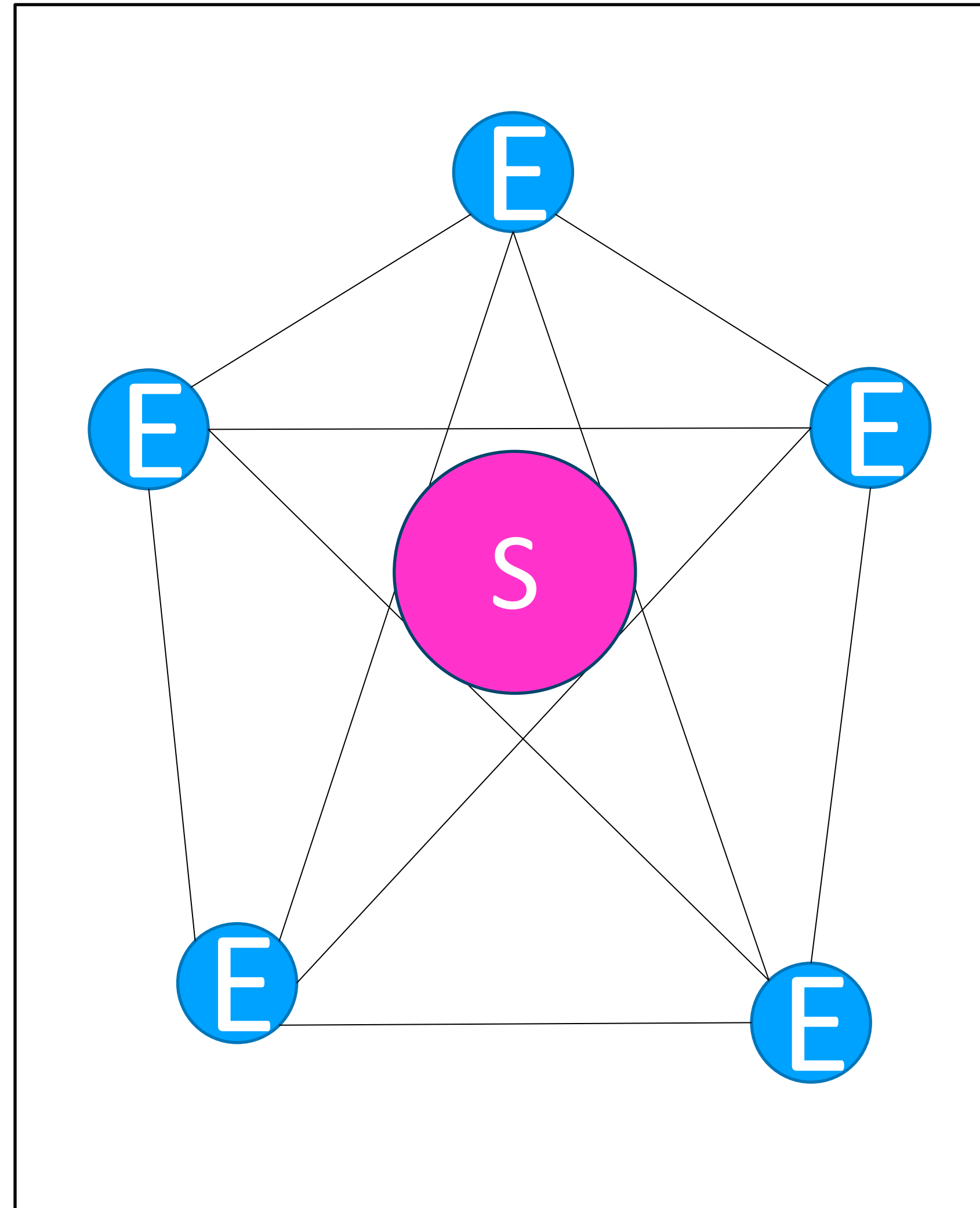
Episodic

Semantic



Memory

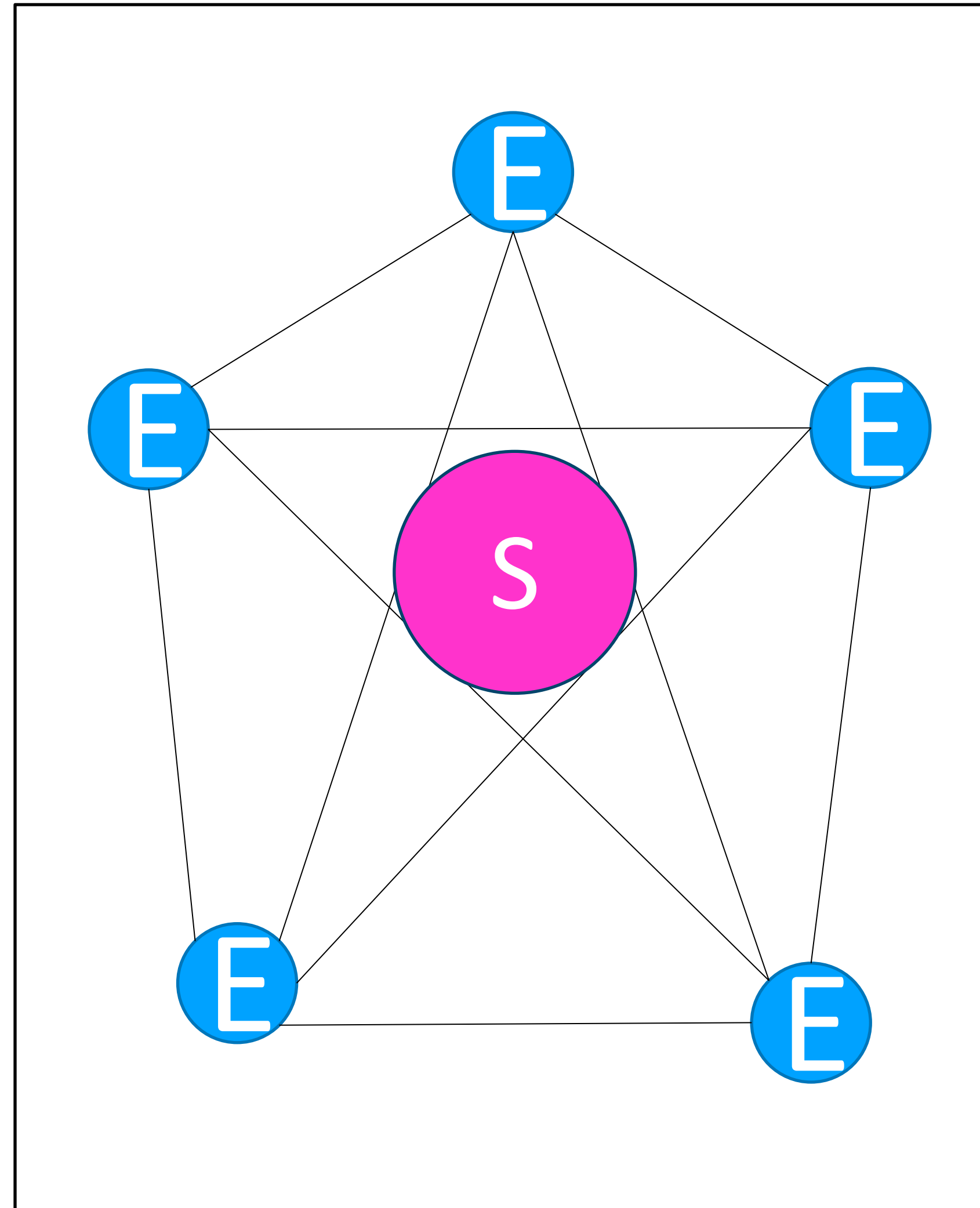
Exposure & Repetition



Memory

Exposure & Repetition

3

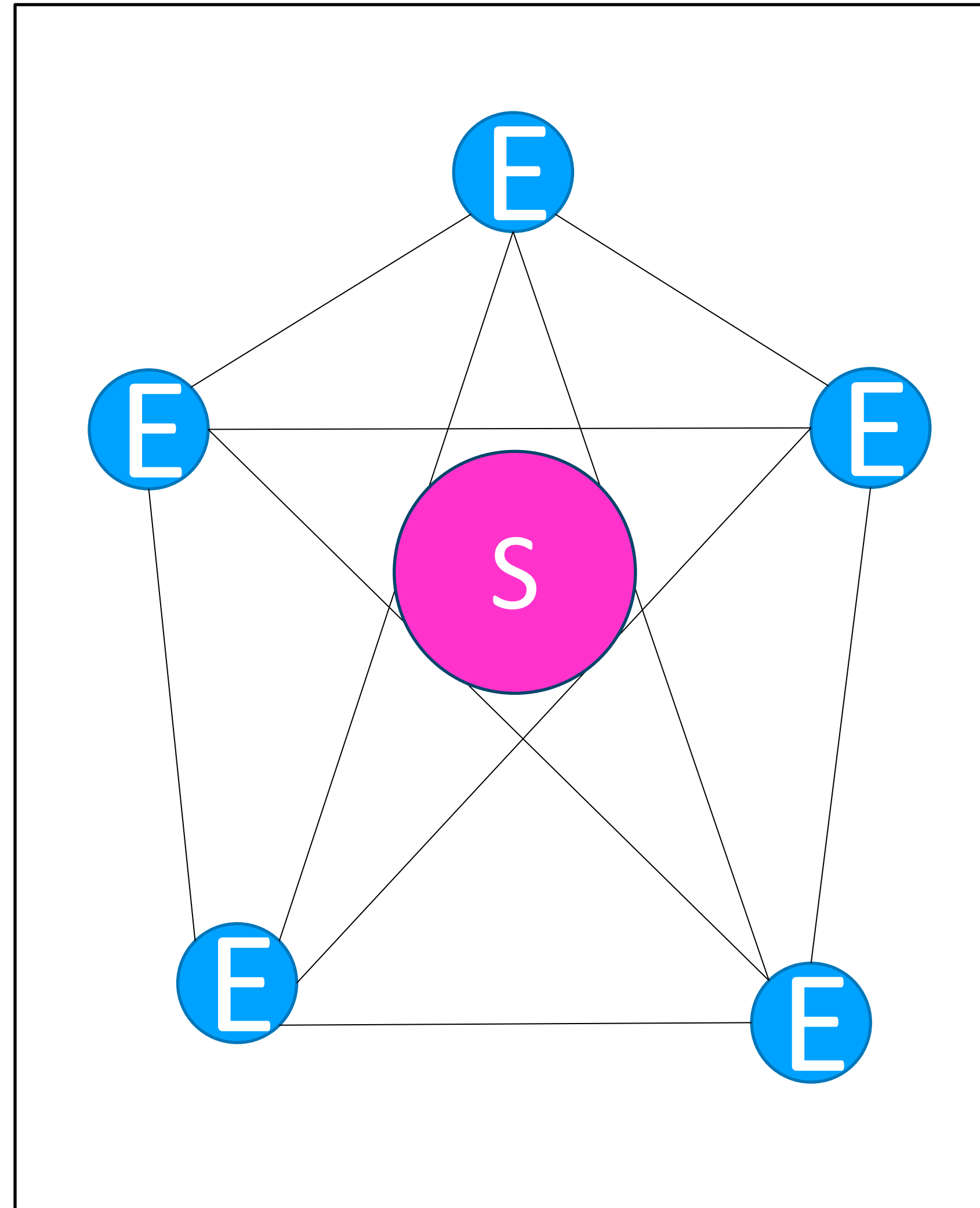


Memory

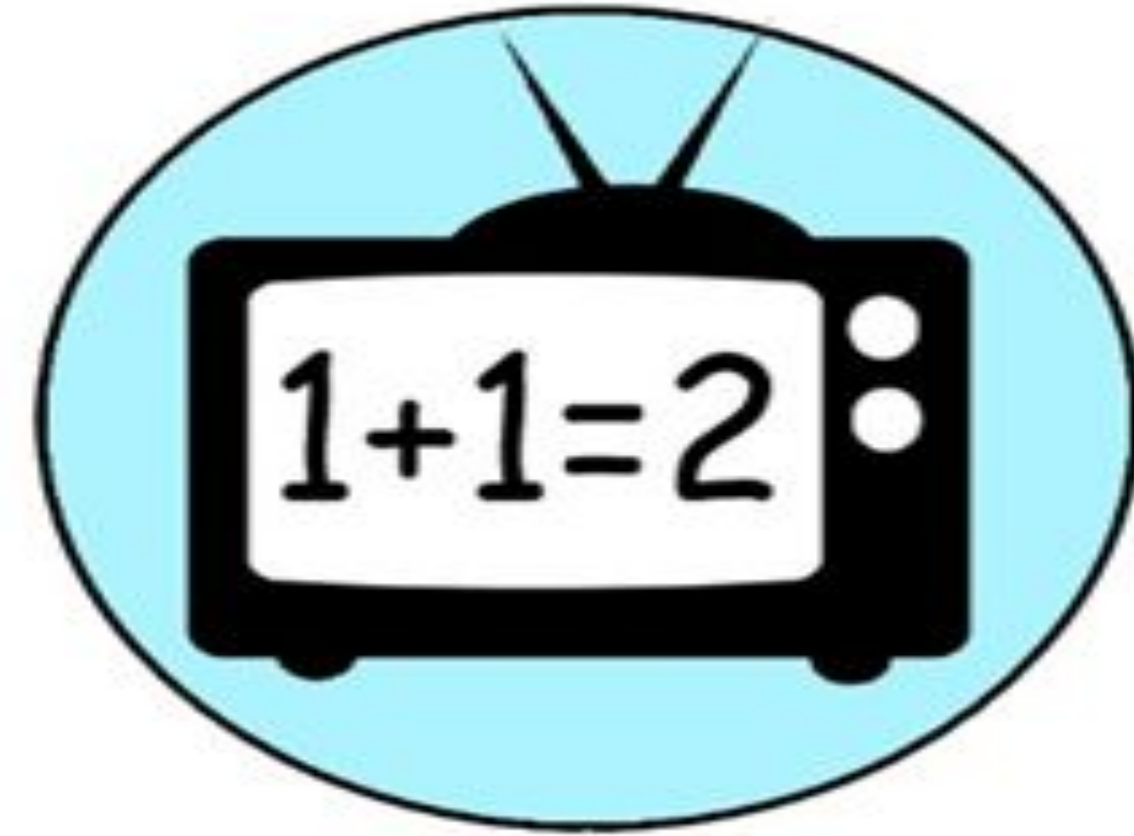
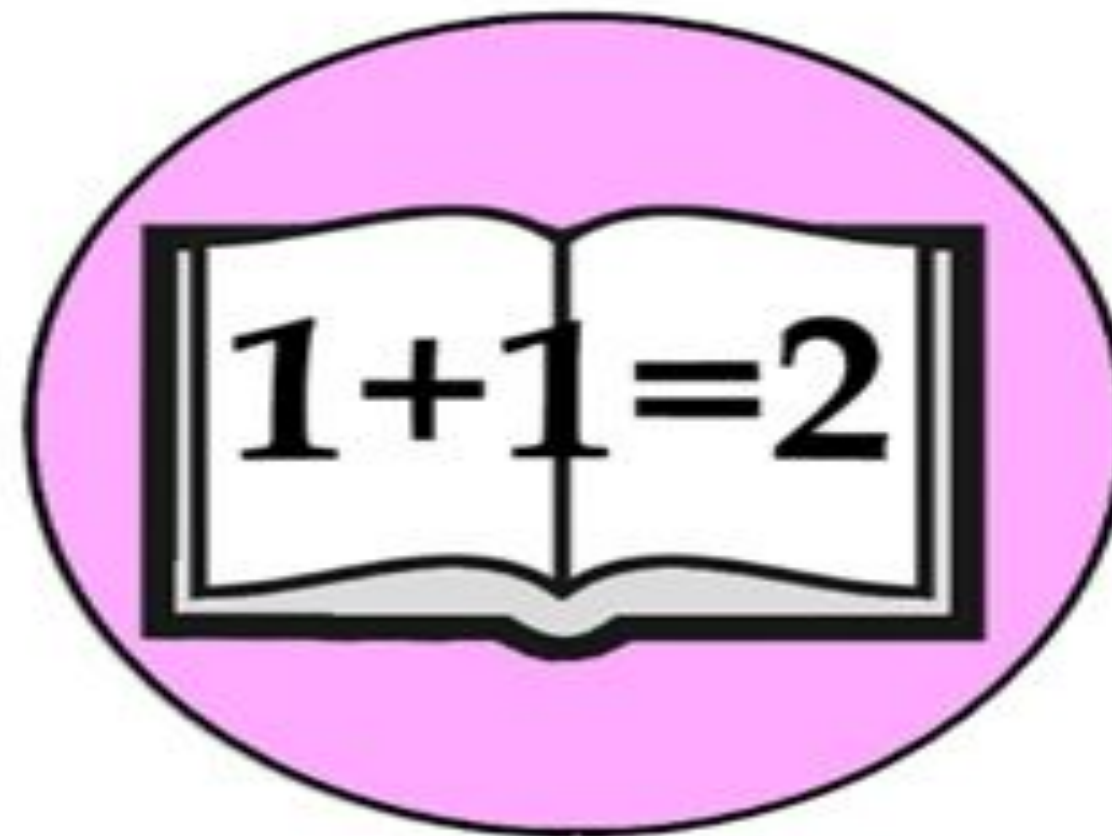
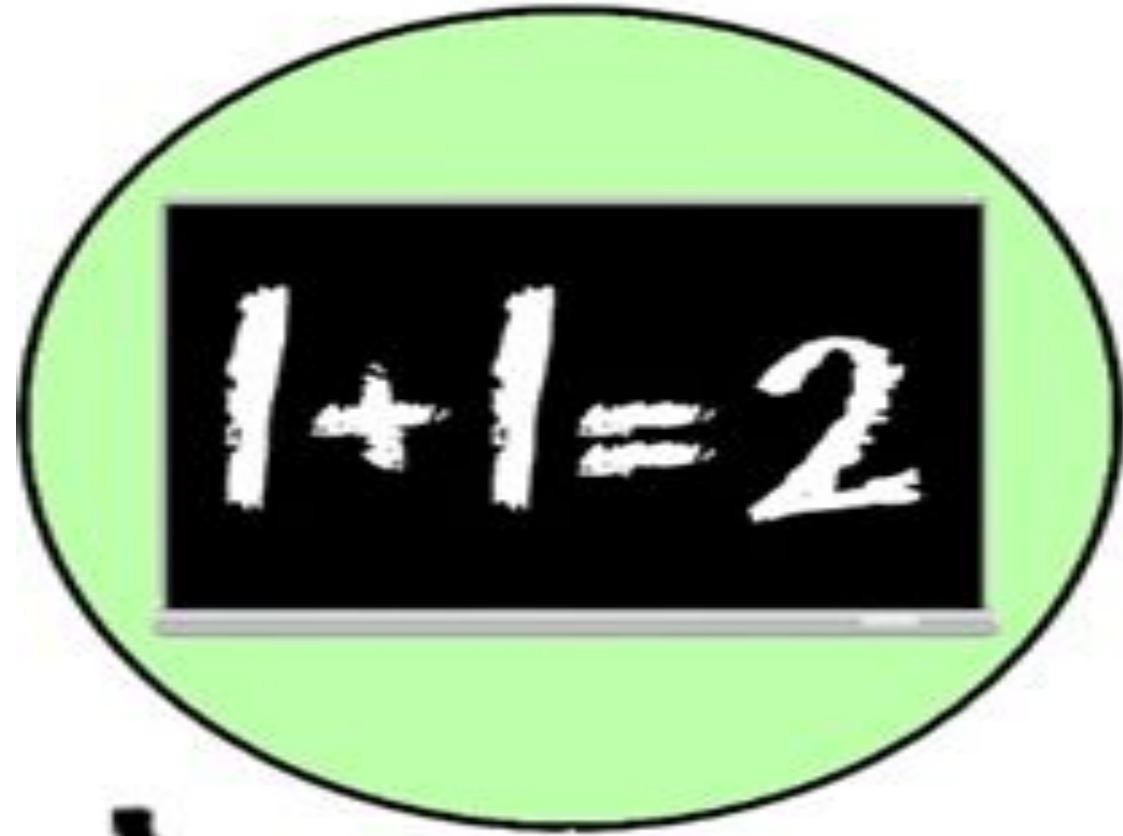
Exposure & Repetition

3

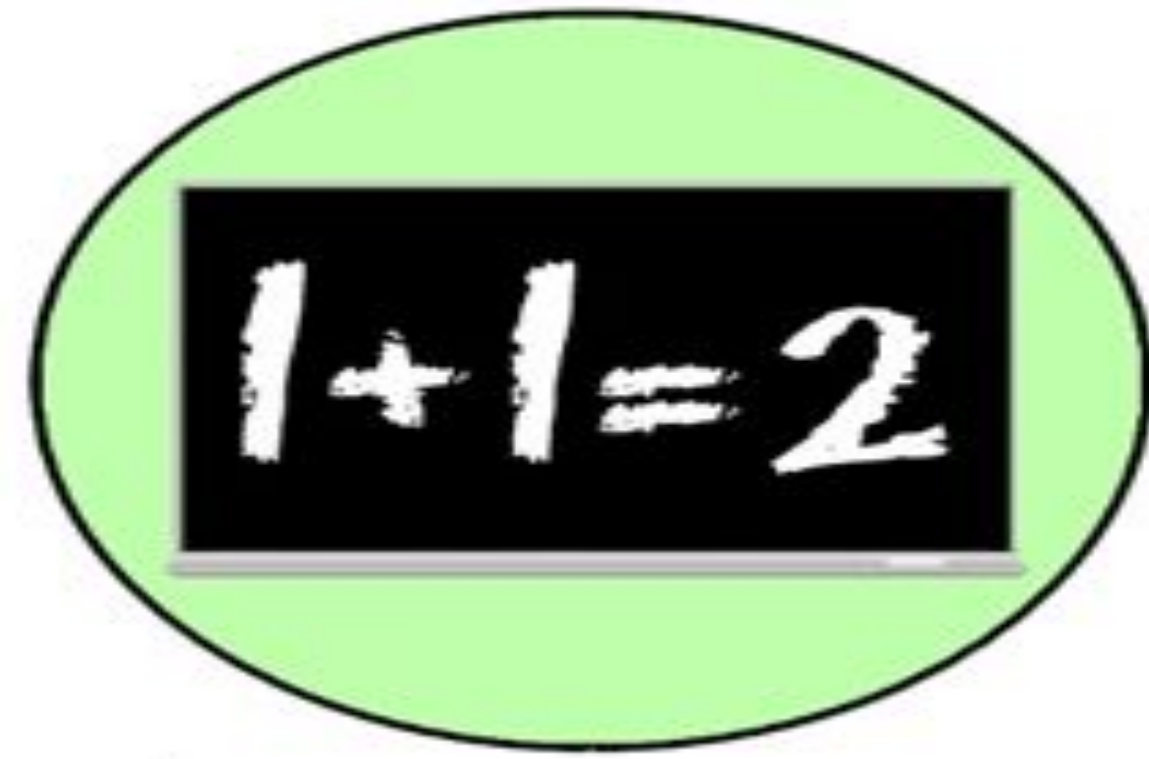
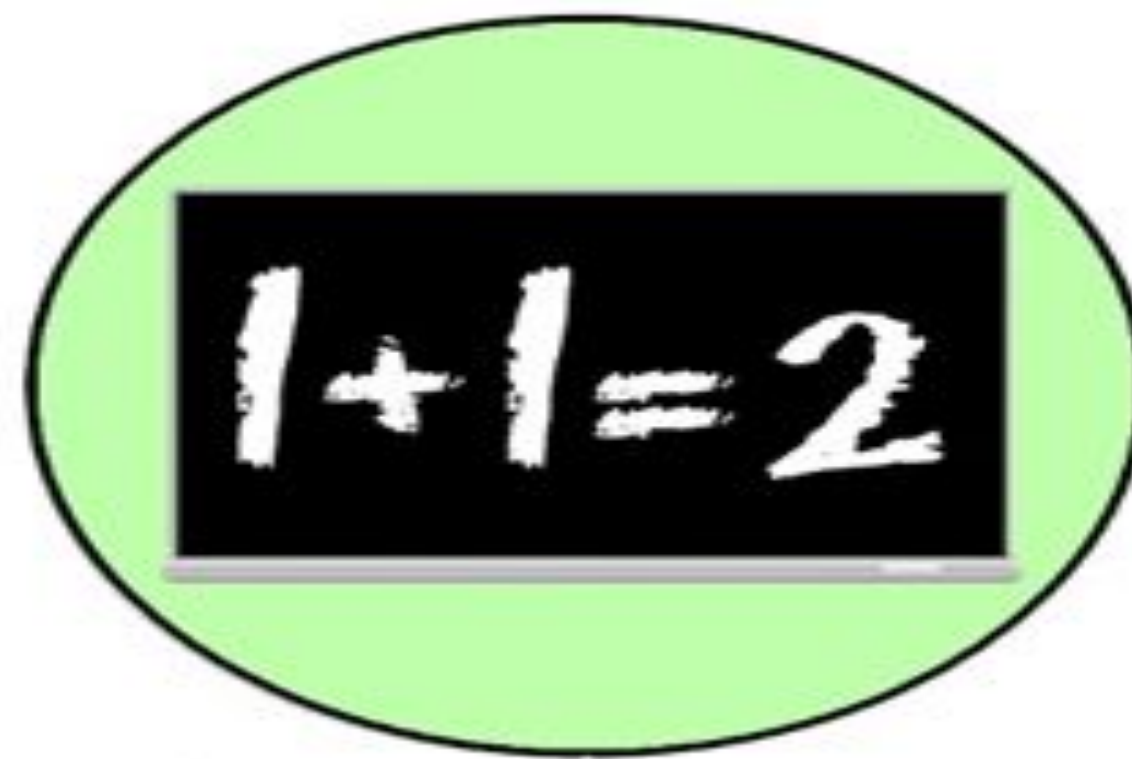
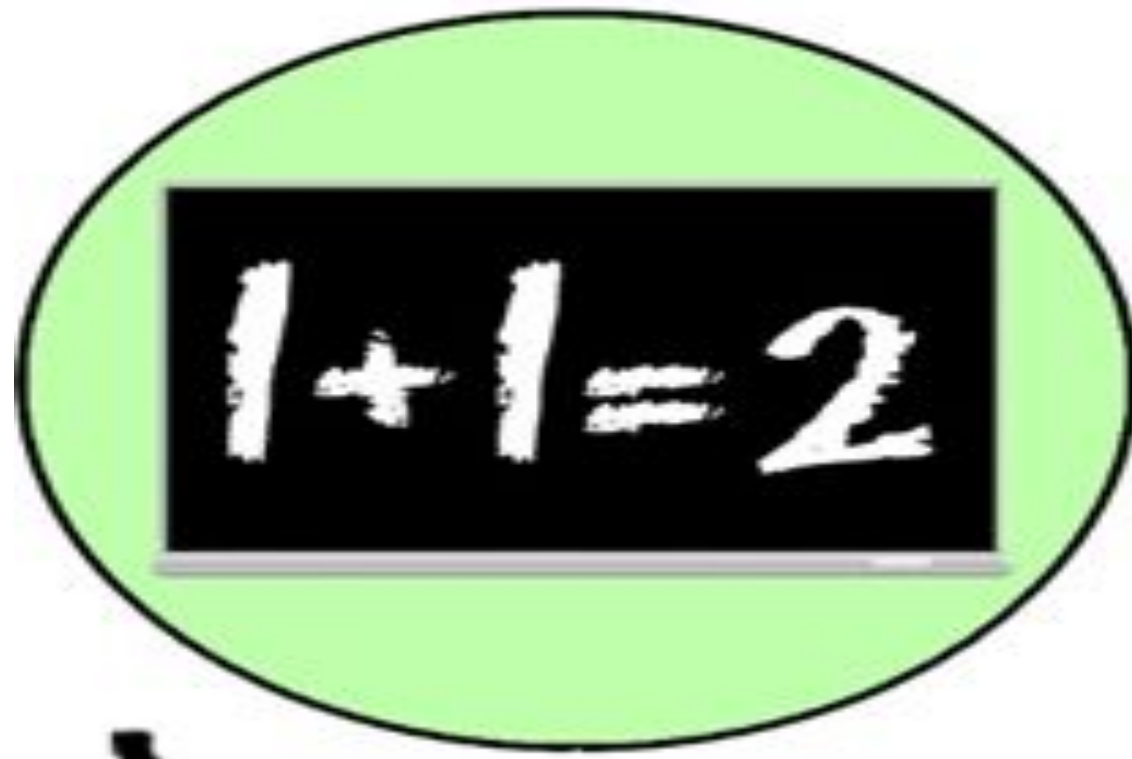
Sleep is Key



E P I S O D I C



E P I S O D I C



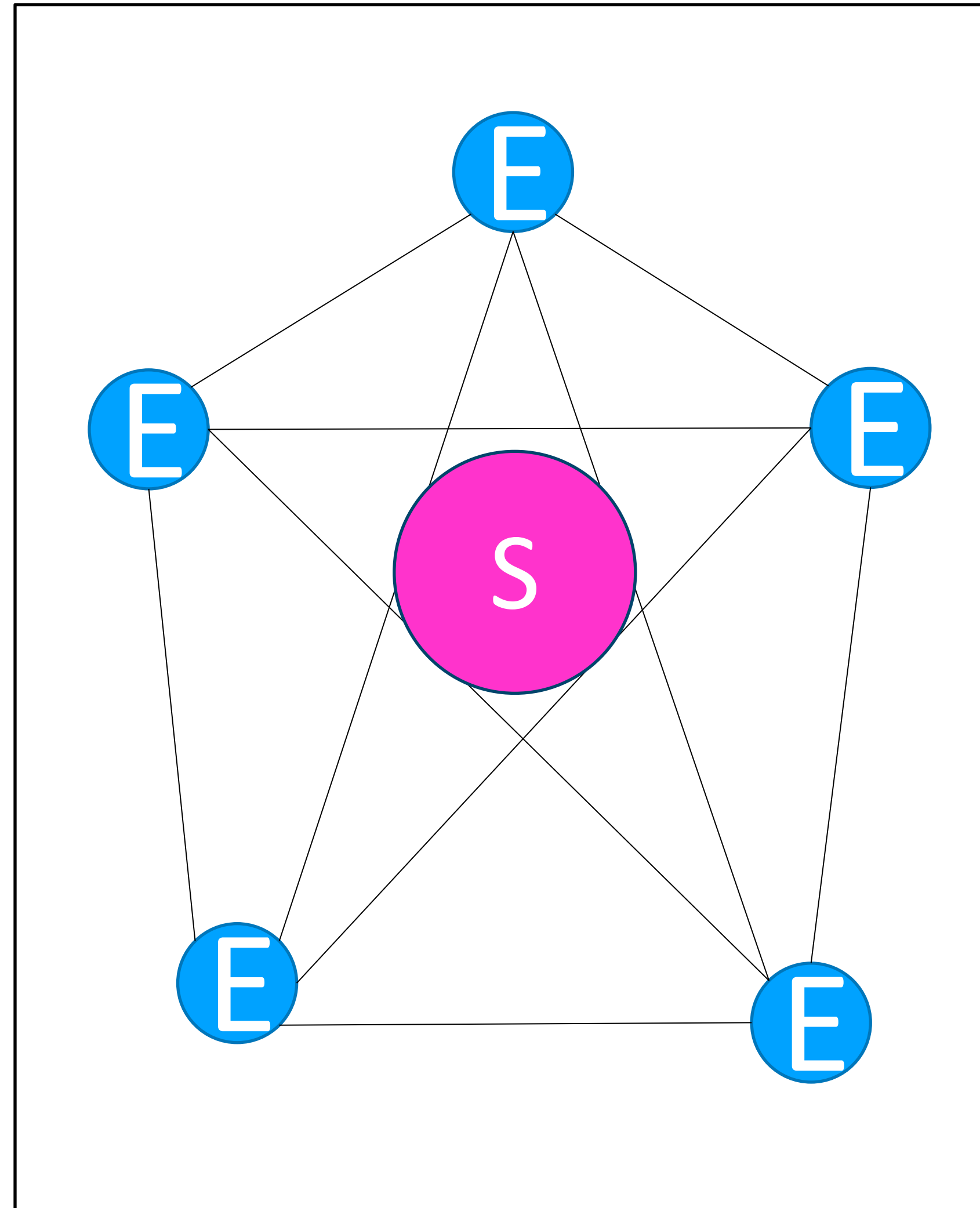
Memory

Exposure & Repetition

3

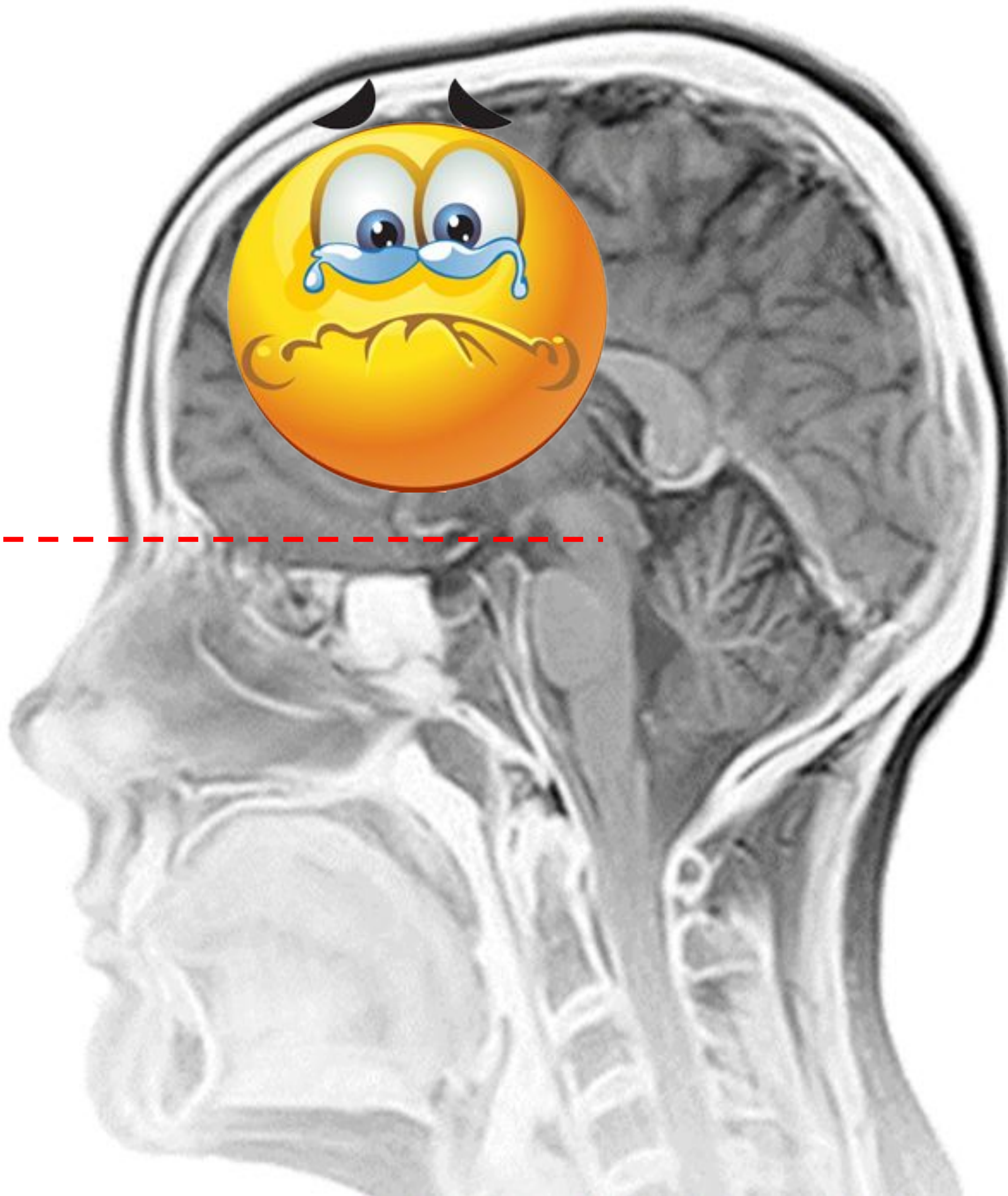
Sleep is Key

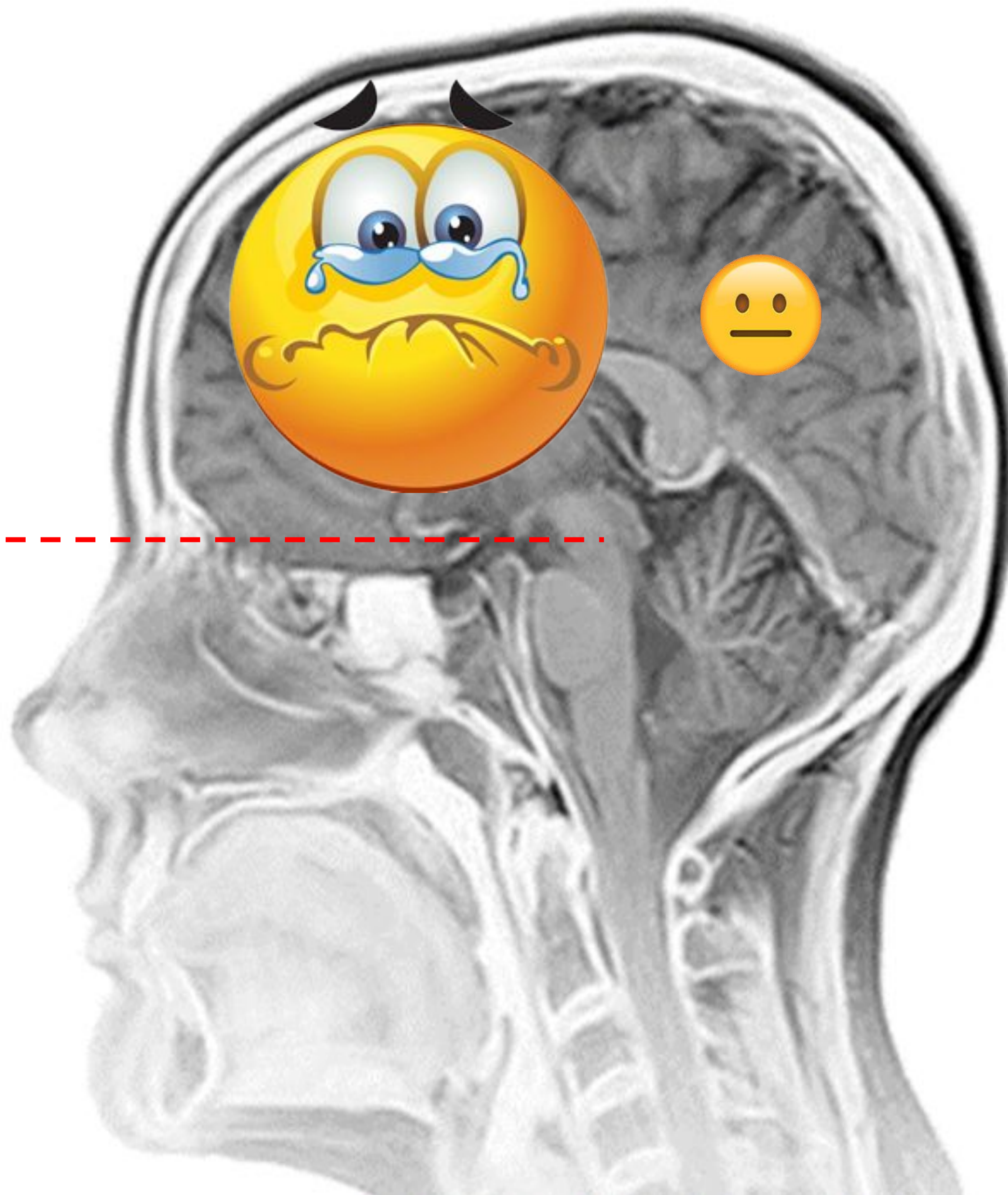
Context Matters

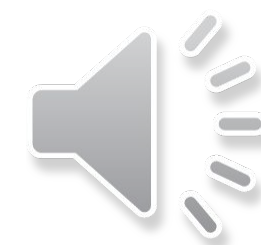


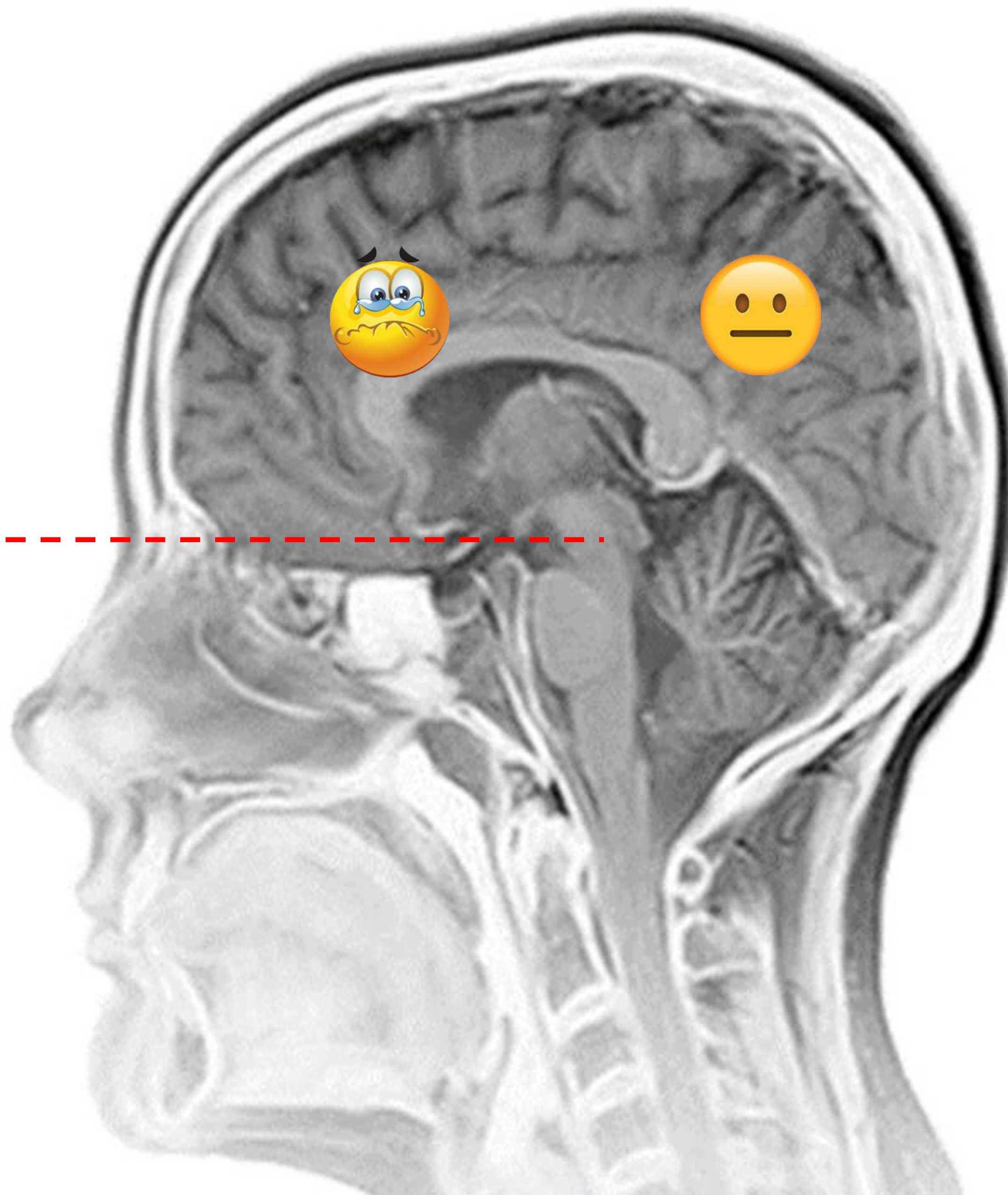
Deep Memories?

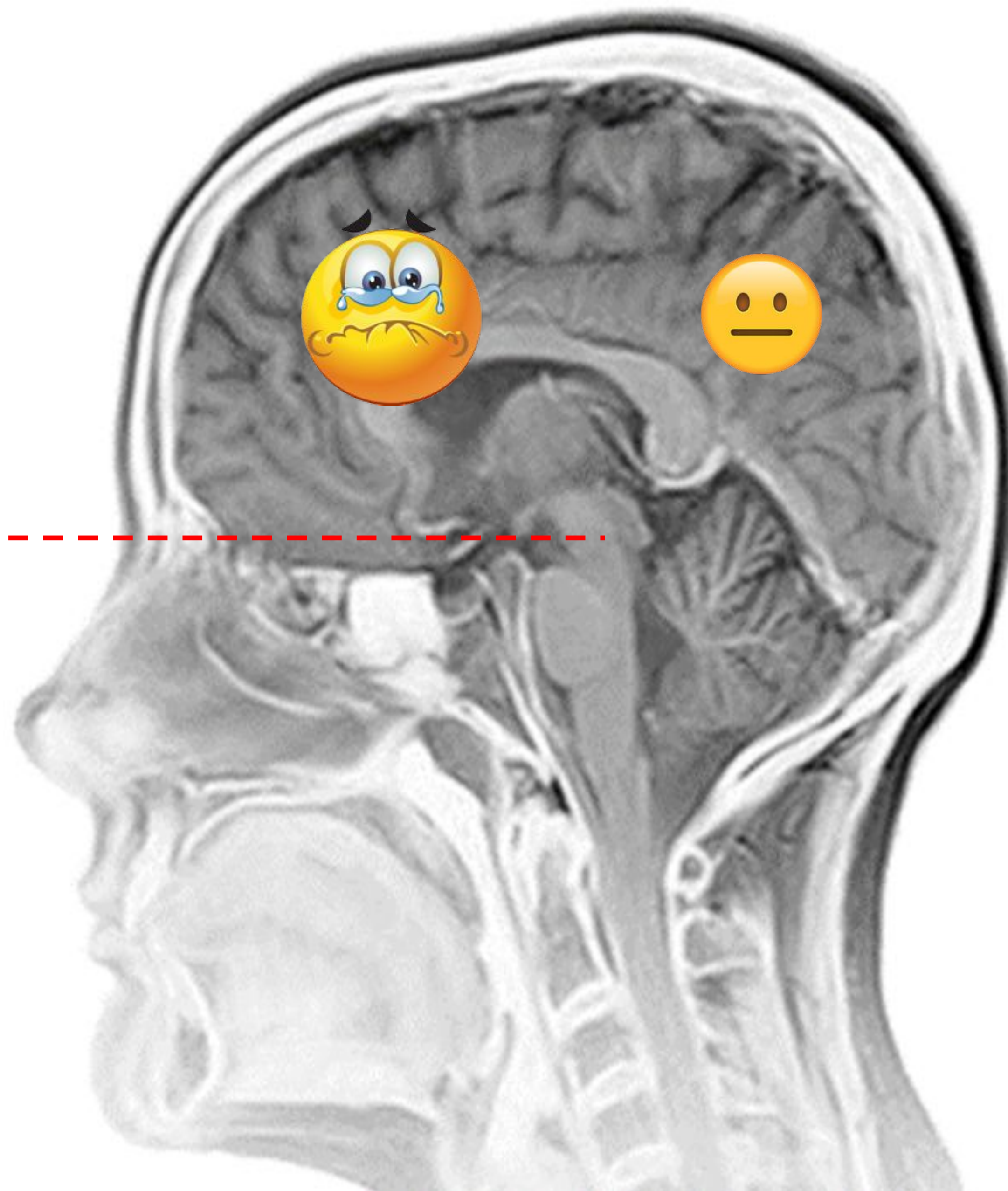


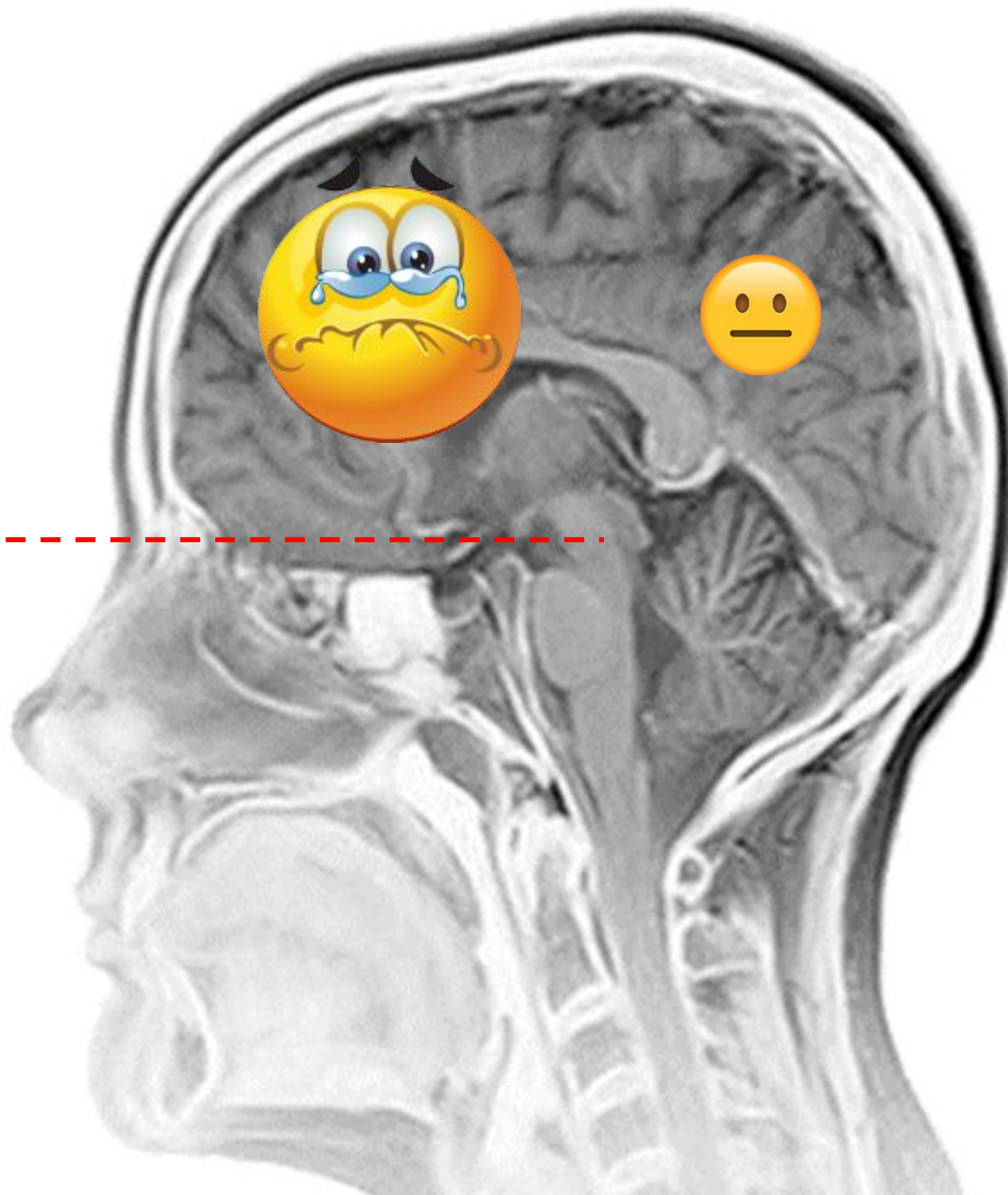


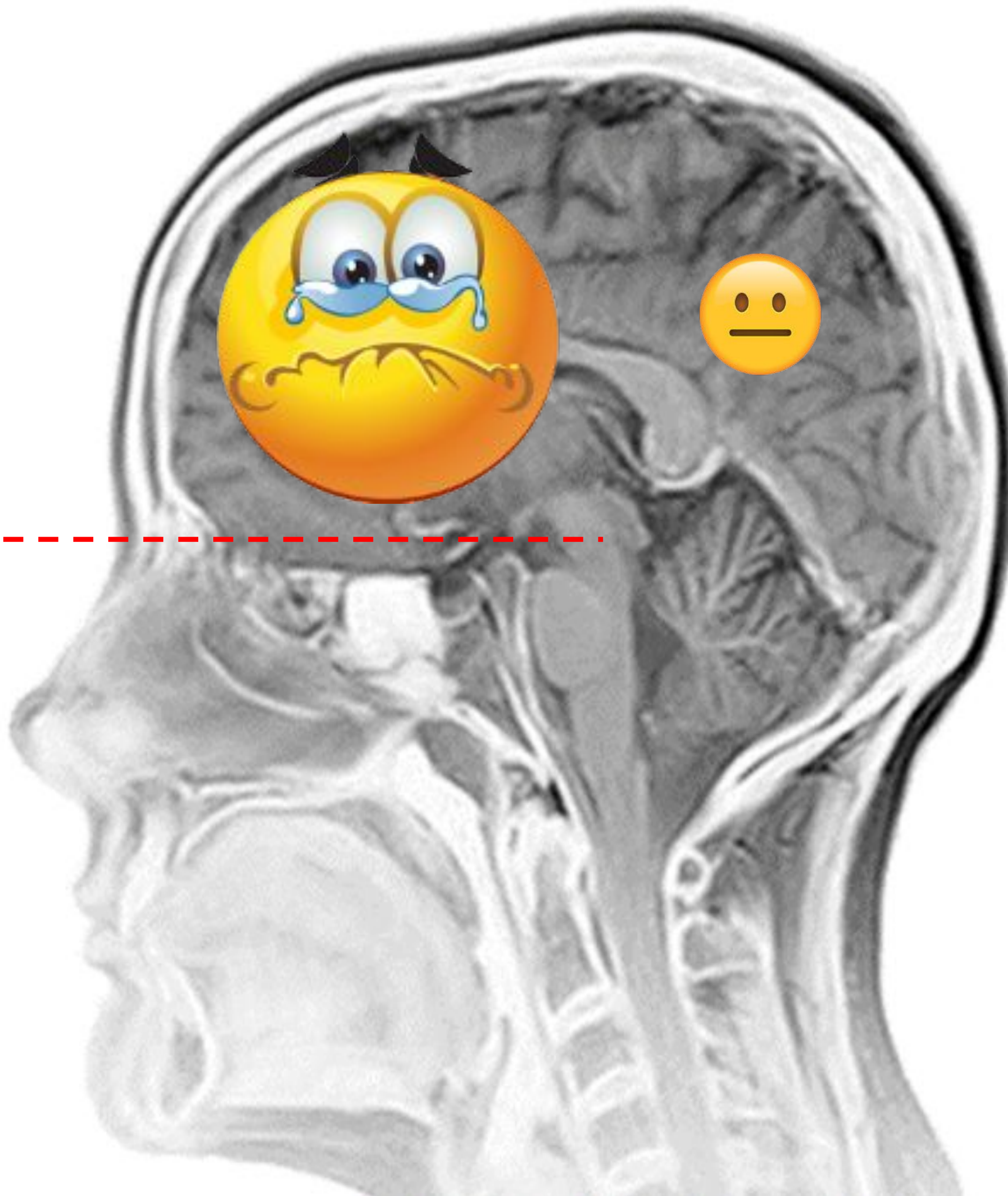


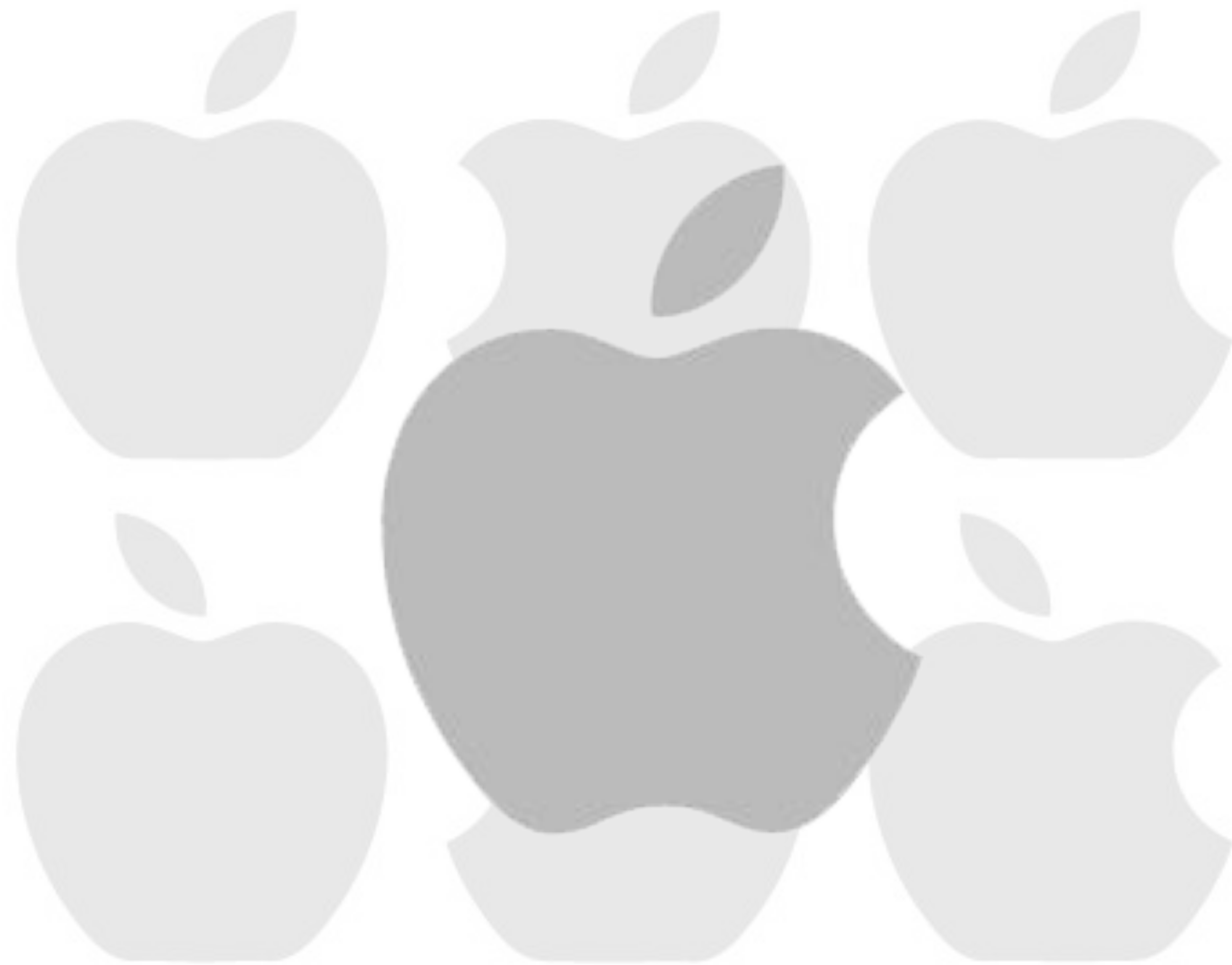


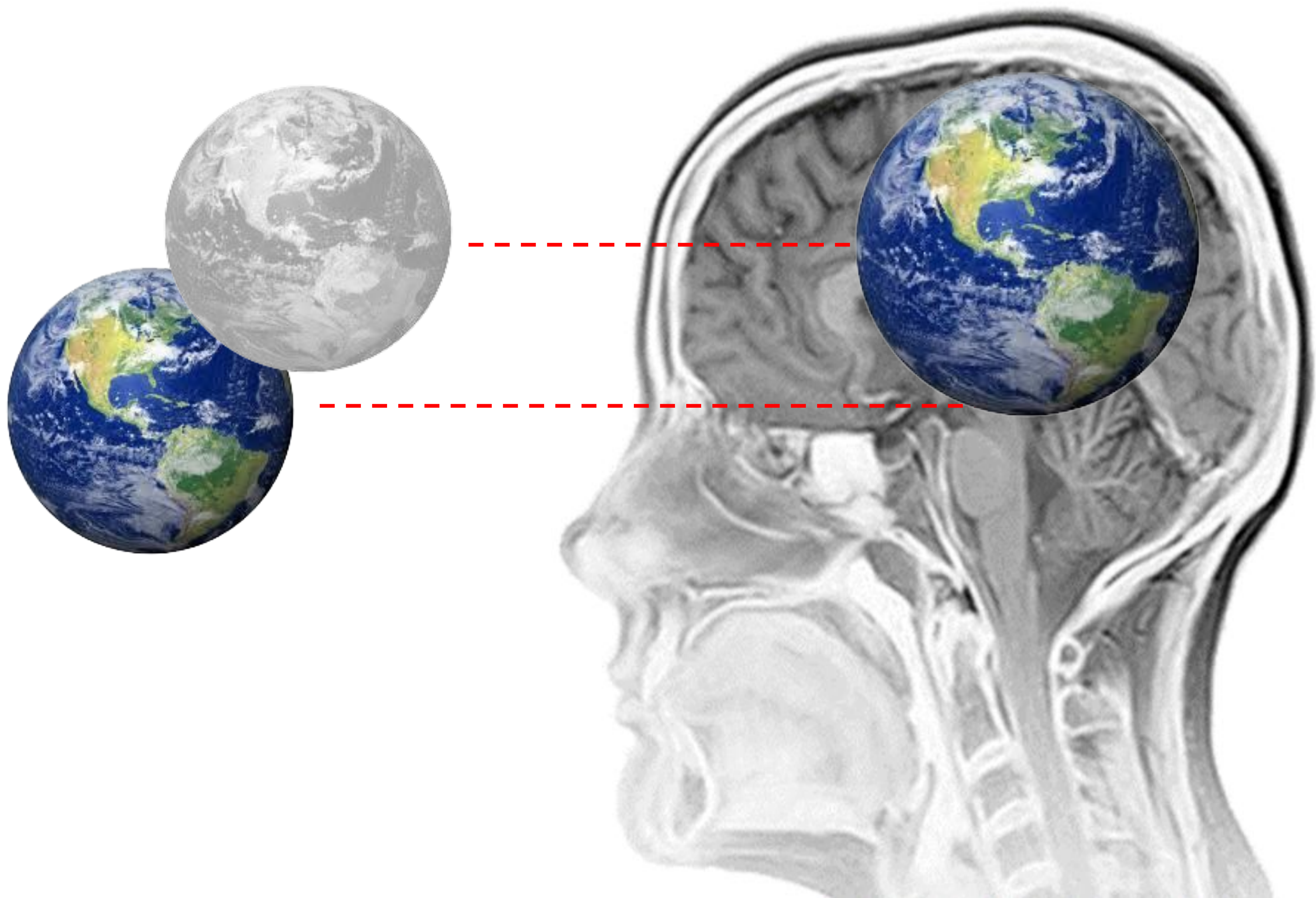












Recall



Recognition

*What's the capital of
Germany?*

A) Berlin

B) Munich

C) Bern

Recall

*What's the capital of
Germany?*

Recall

*What's the capital of
Germany?*



Memory

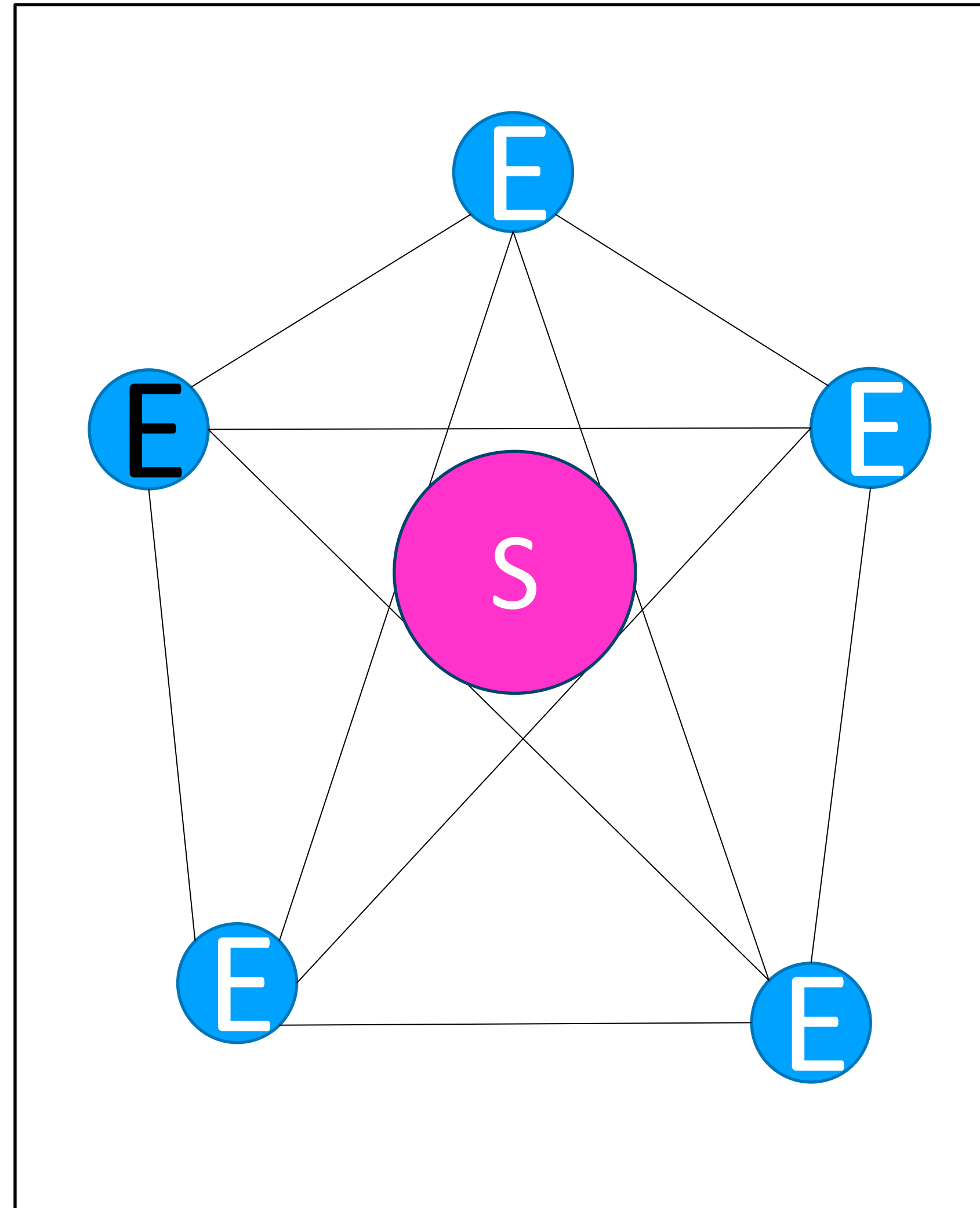
Exposure & Repetition

3

Sleep is Key

Context Matters

Active is Good



SURFACE VERBS

RECALL

SUMMARIZE

CONTRAST

DEFEND

IDENTIFY

DEFINE

RESTATE

CLASSIFY

QUESTION

CRITICIZE

TEST

EXPLAIN

ORDER

RECOGNIZE

ASSOCIATE

DECONSTRUCT

DEBATE

HYPOTHESIZE

SURFACE VERBS

RECALL

SUMMARIZE

CONTRAST

DEFEND

IDENTIFY

DEFINE

RESTATE

CLASSIFY

QUESTION

CRITICIZE

TEST

EXPLAIN

ORDER

RECOGNIZE

ASSOCIATE

DECONSTRUCT

DEBATE

HYPOTHESIZE

Retrieval Surface

VERBS

Define	Point Out
Arrange	Find
List	Identify
Recall	Answer
Quote	Tell
Name	Order
Repeat	Select
Describe	Recognize

Facts (Surface)

STRATEGIES / TASKS

Multiple Choice

Free-Recall

Scavenger Hunt

Illustrations

Worked Examples

Flashcards

Fill In The Blank

Label the Diagram

Order the List

Complete the Picture

***DIRECT
INSTRUCTION***

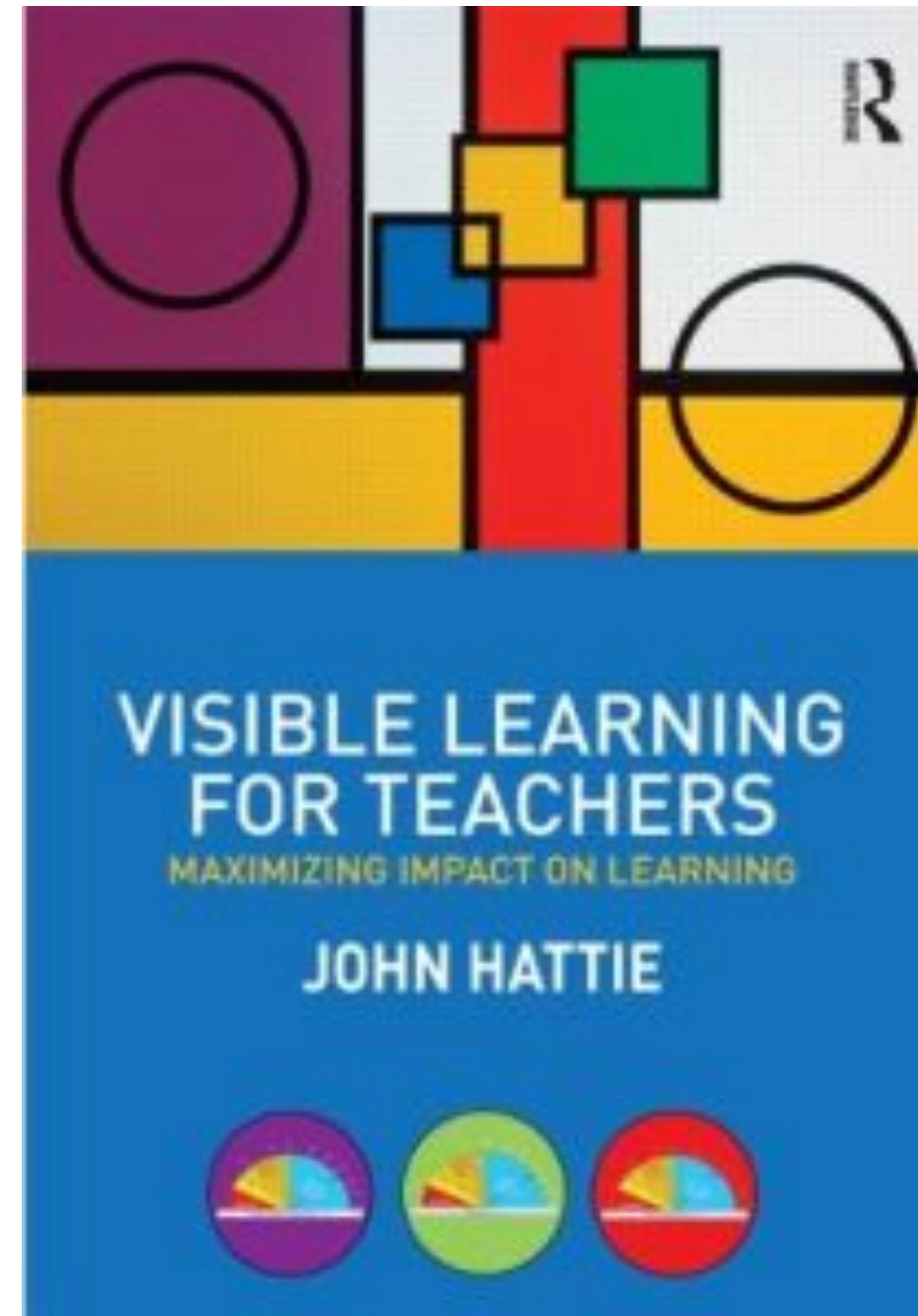
Evidence

Surface Learning

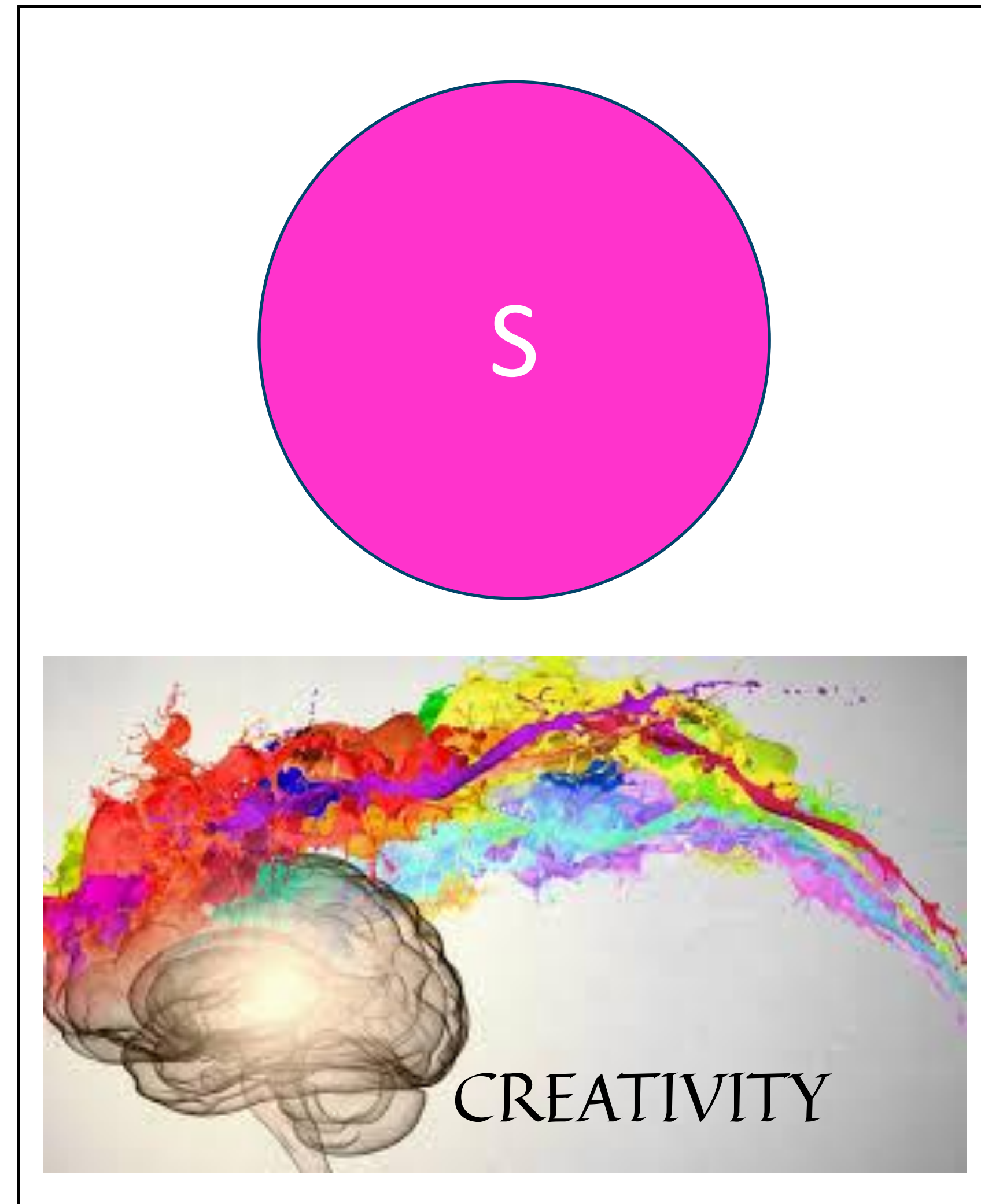
93%

Direct Instruction

Class Size

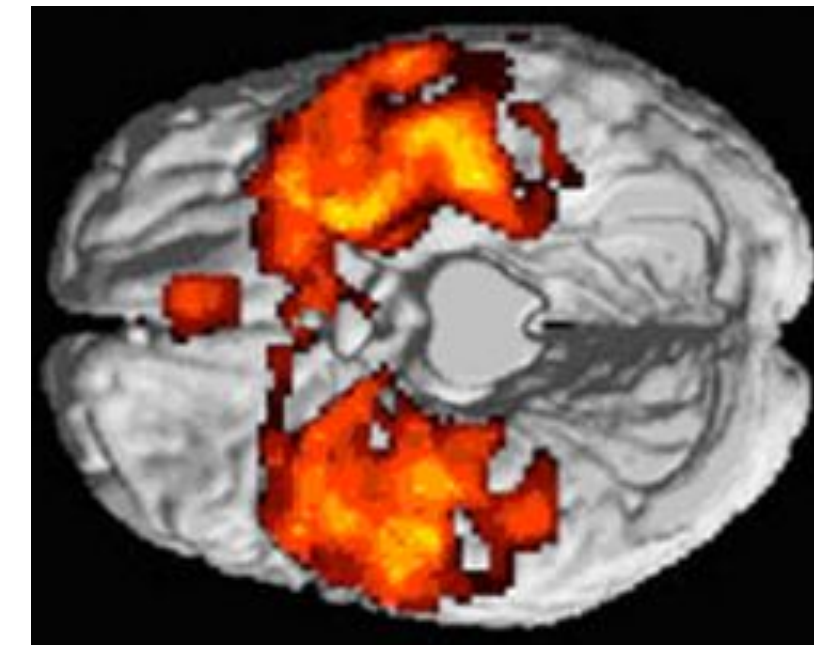
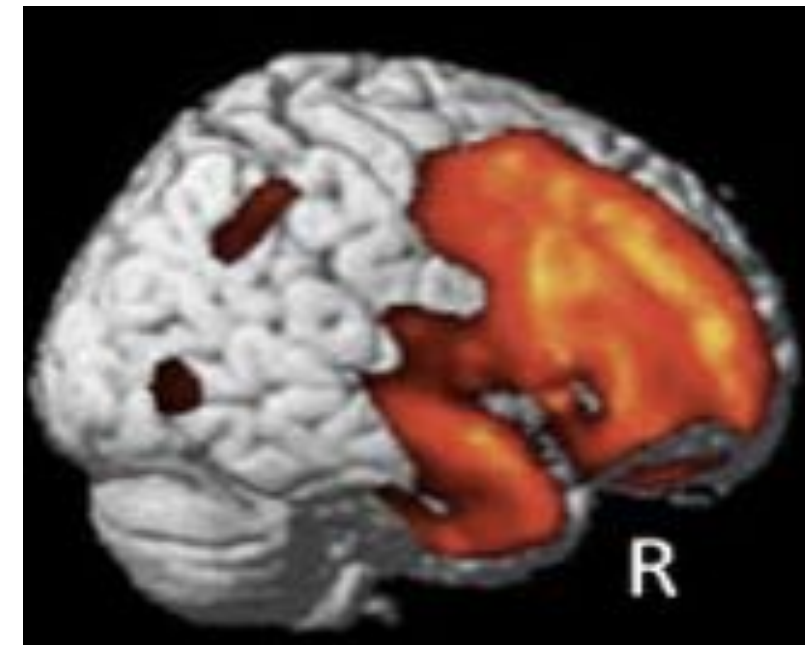
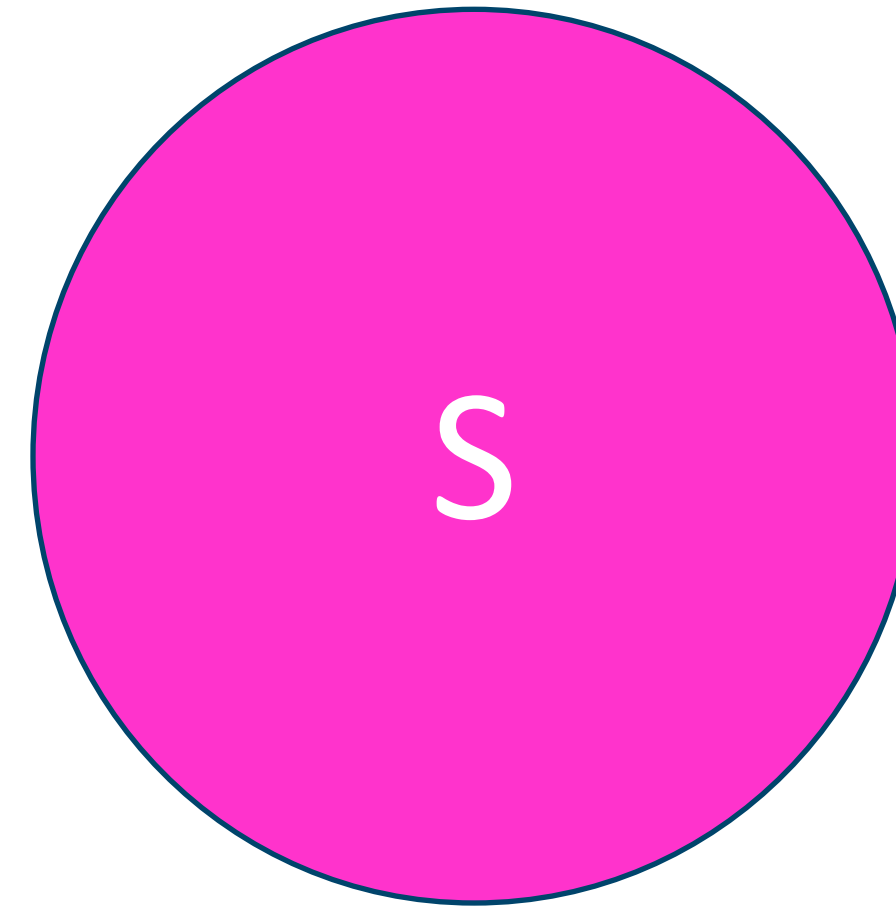


Useable Knowledge



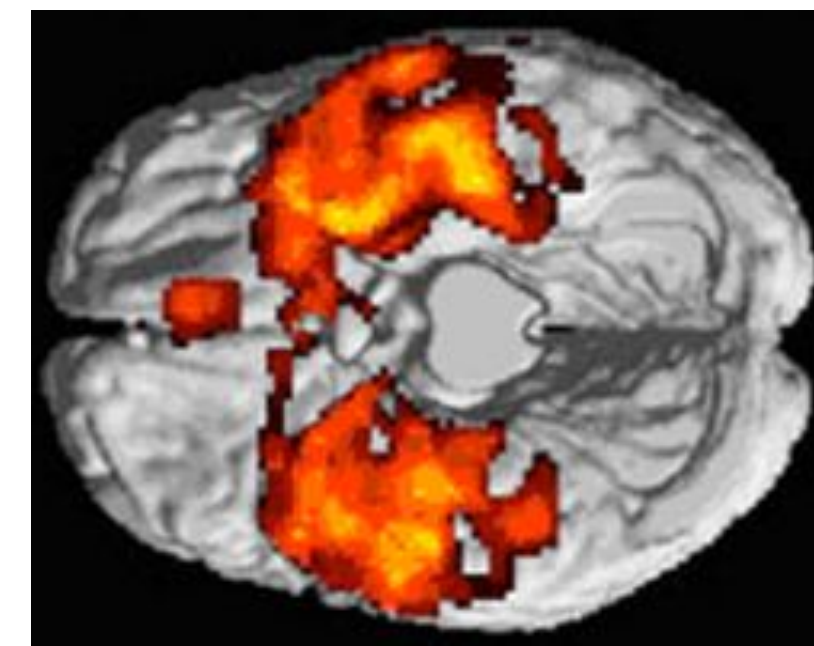
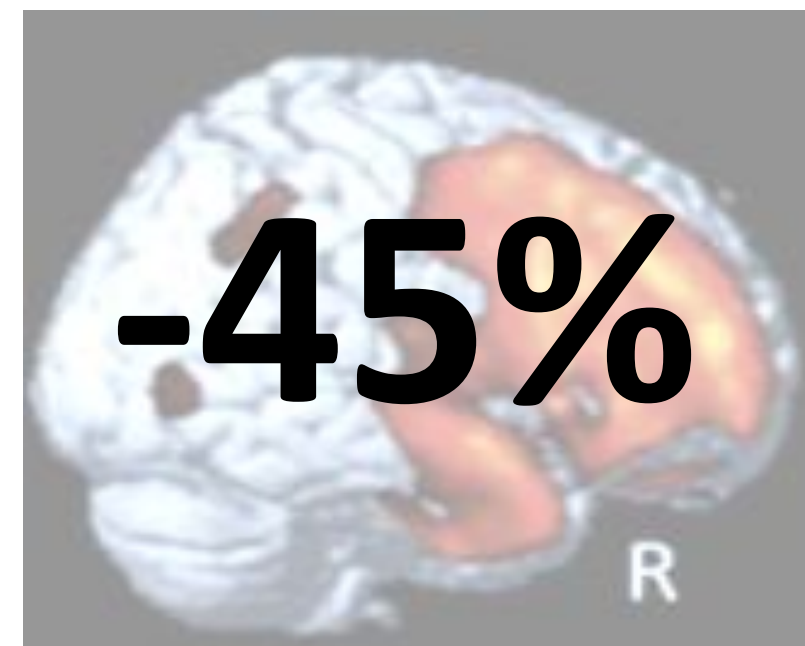
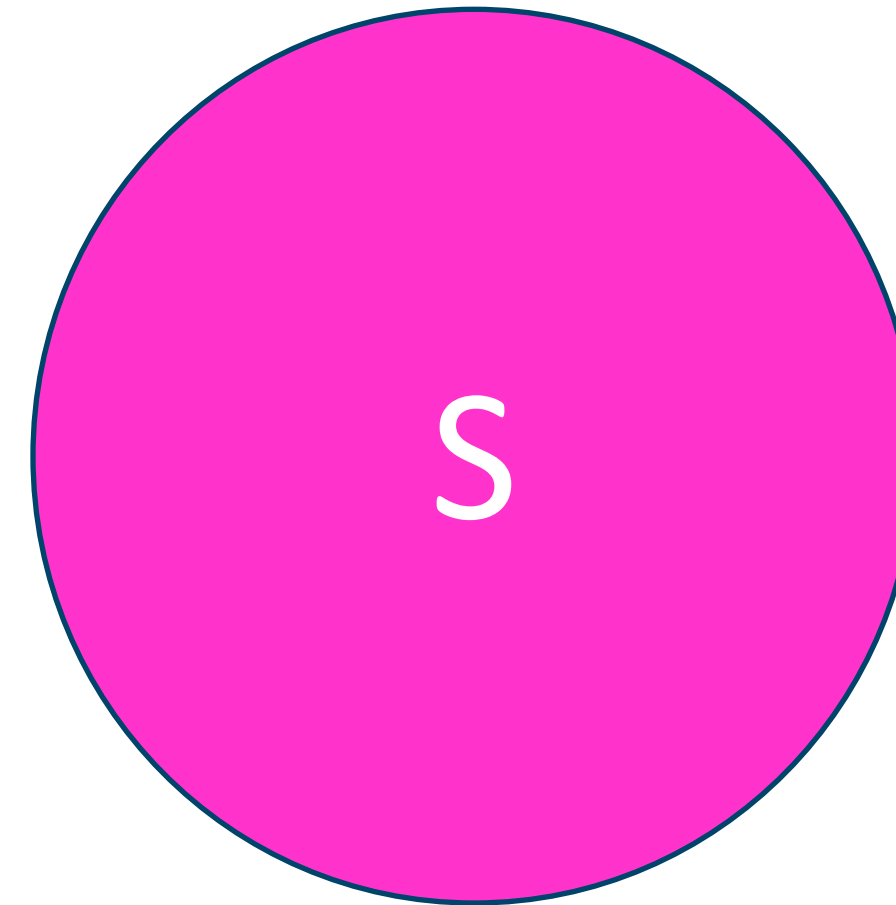
Useable Knowledge

FTD vs SD



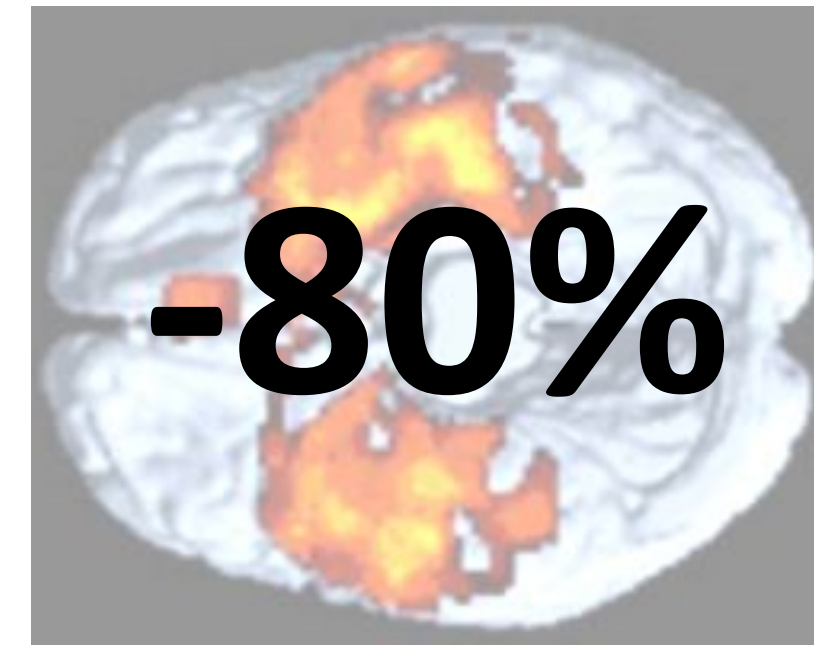
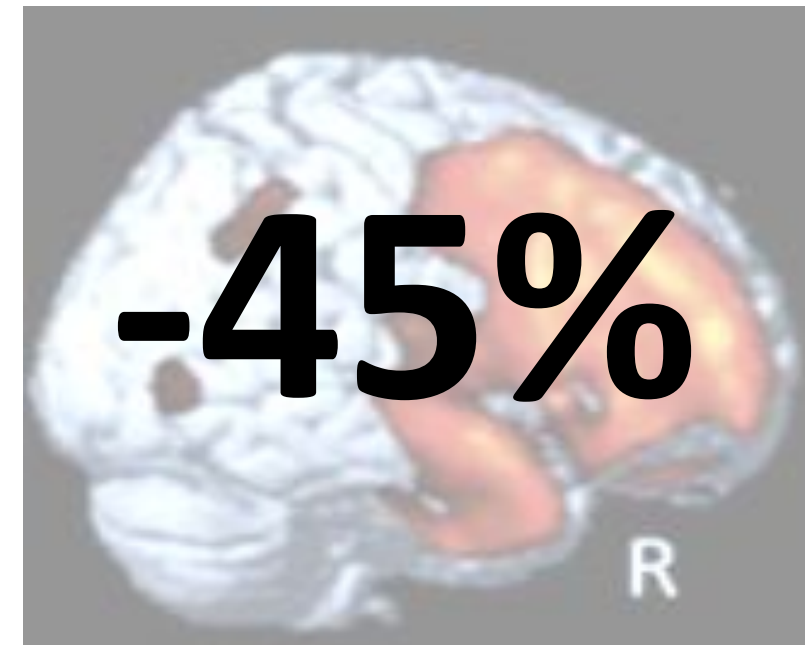
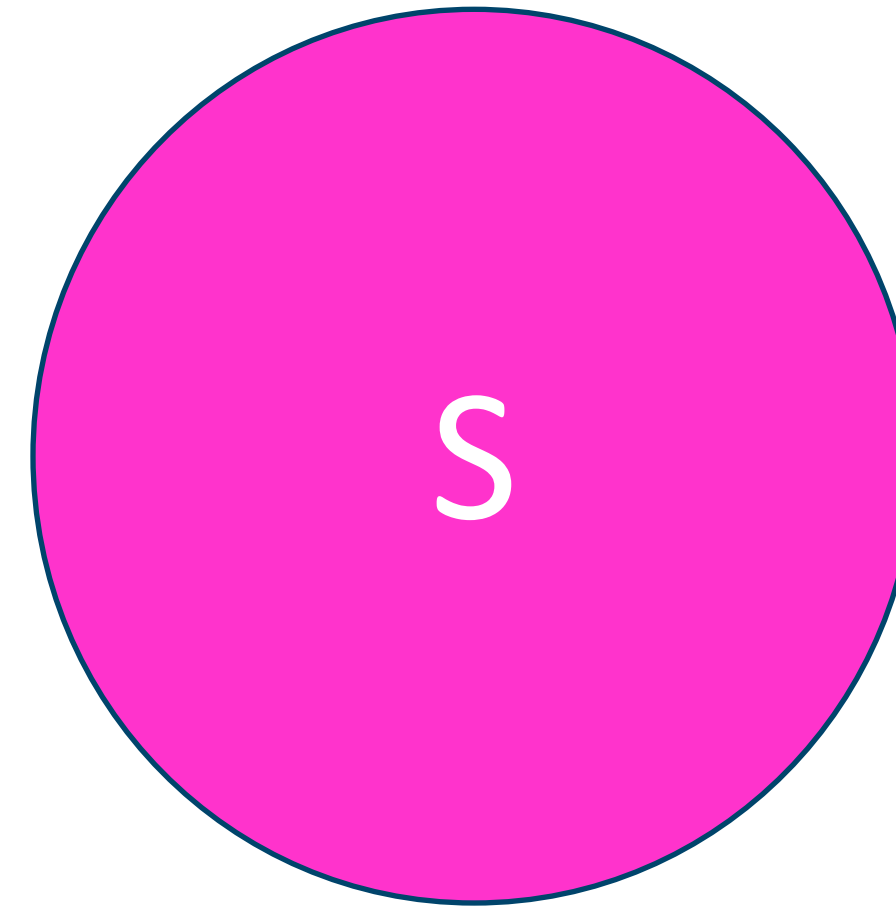
Useable Knowledge

FTD vs SD



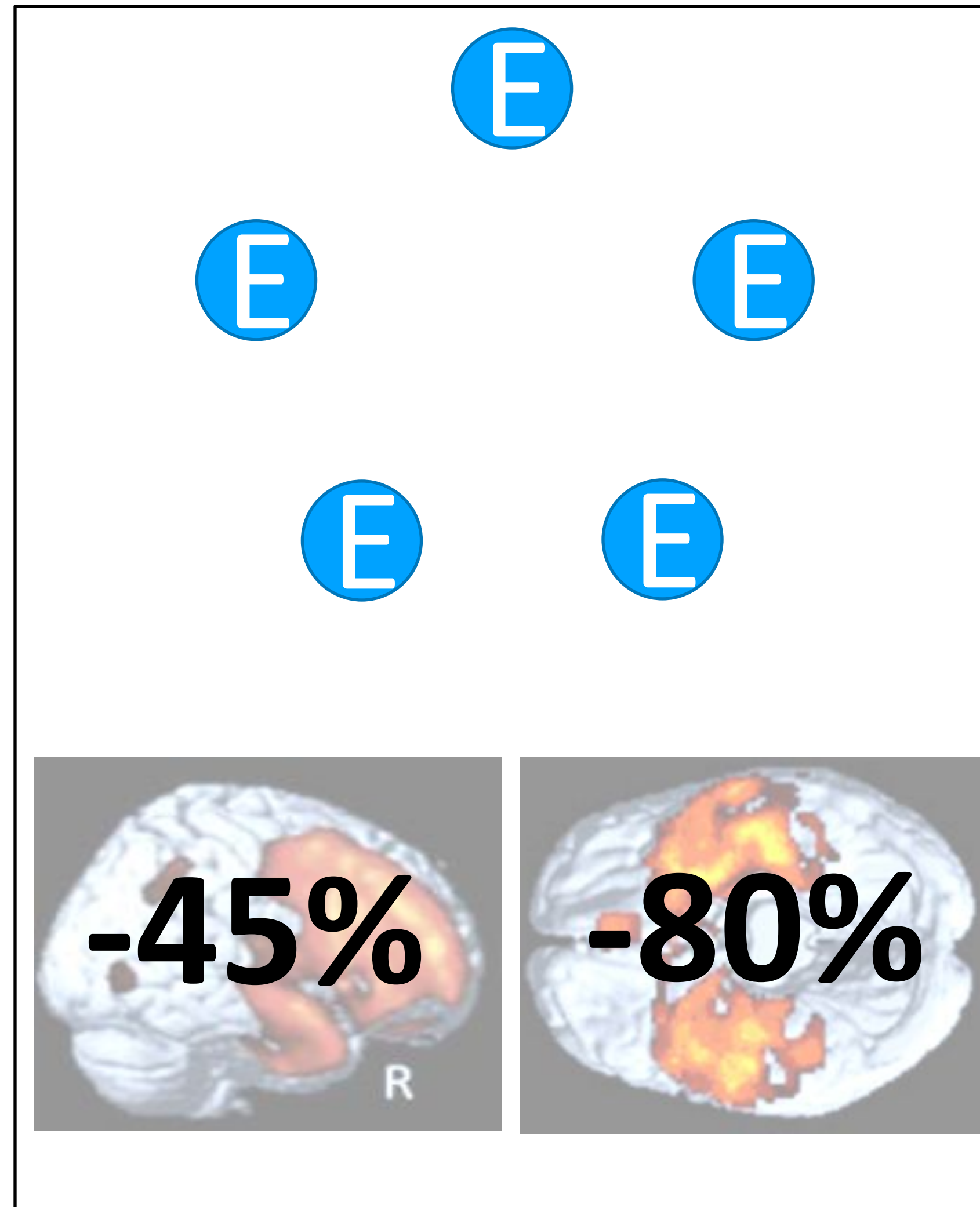
Useable Knowledge

FTD vs SD



Useable Knowledge

FTD vs SD



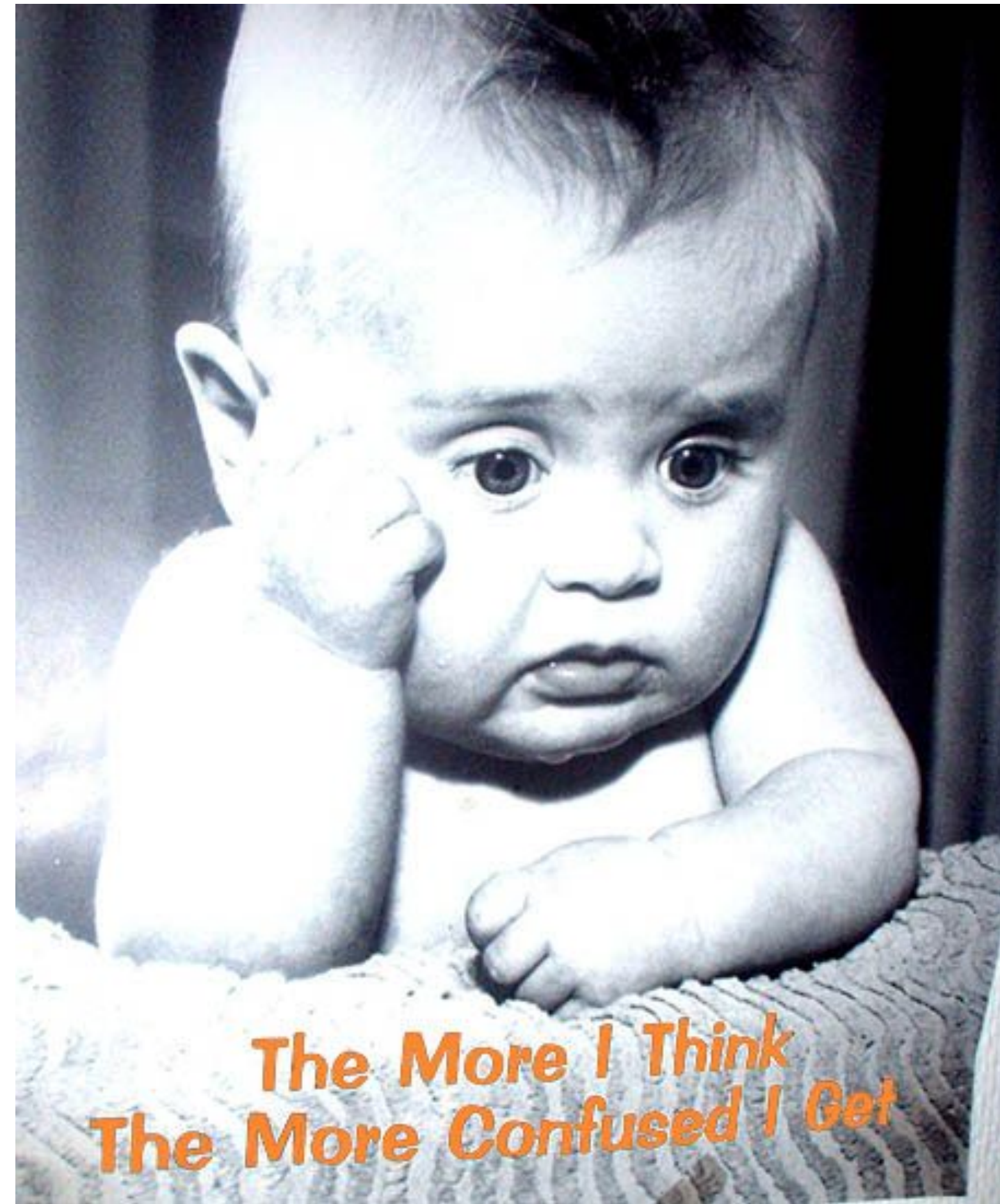
What About...

Problem Based Learning

Inquiry Learning

Immersion Learning

Exploratory Learning



Basic Learning Process

Retrieval (Surface)

Concept Formation (Deep 1)

Concept Shifting (Deep 2)

Concept Testing (Deep 3)

Adaptive Transfer

THINKING



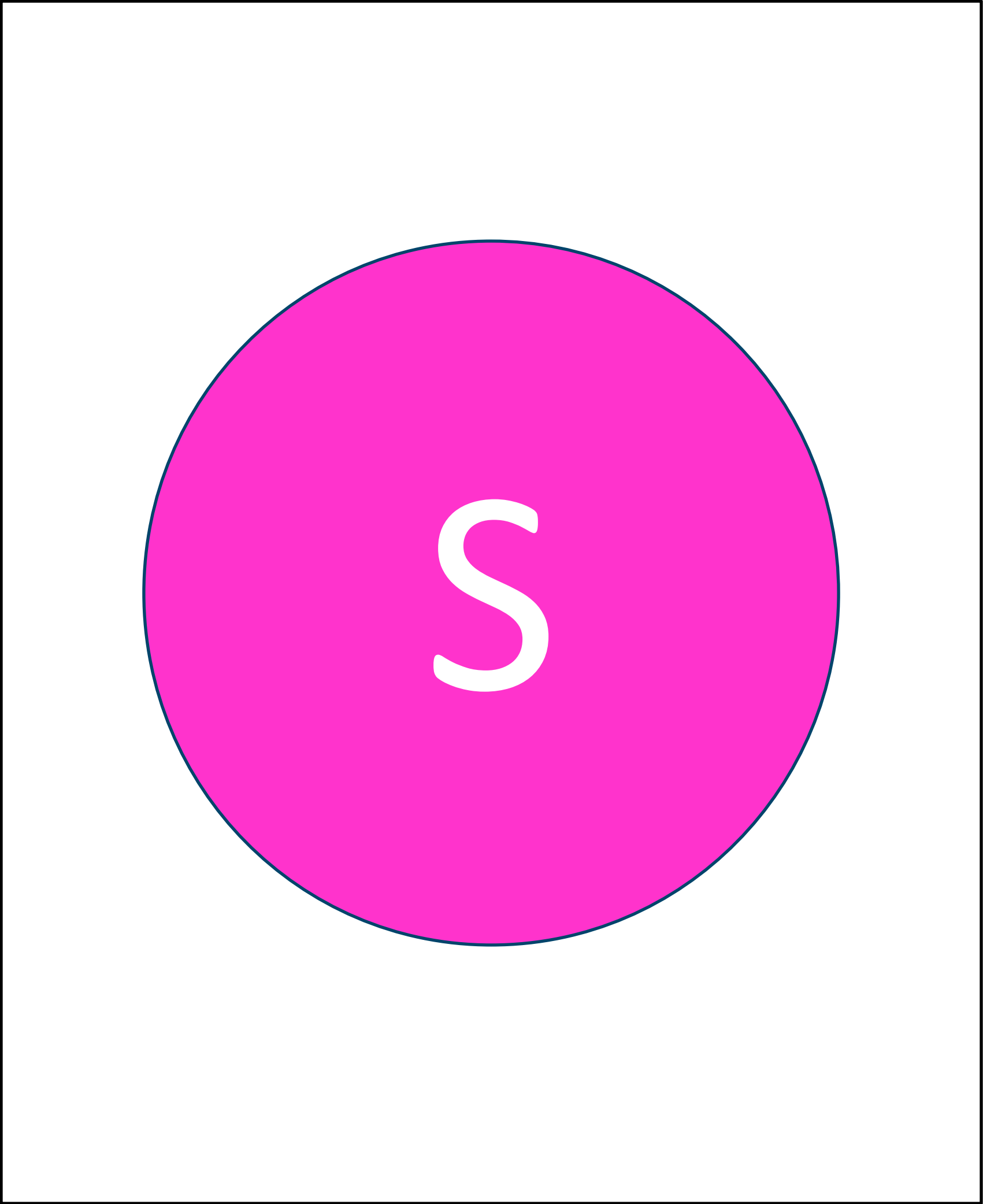
Basic Learning Process

Surface = **WHAT** you Know
(Facts)

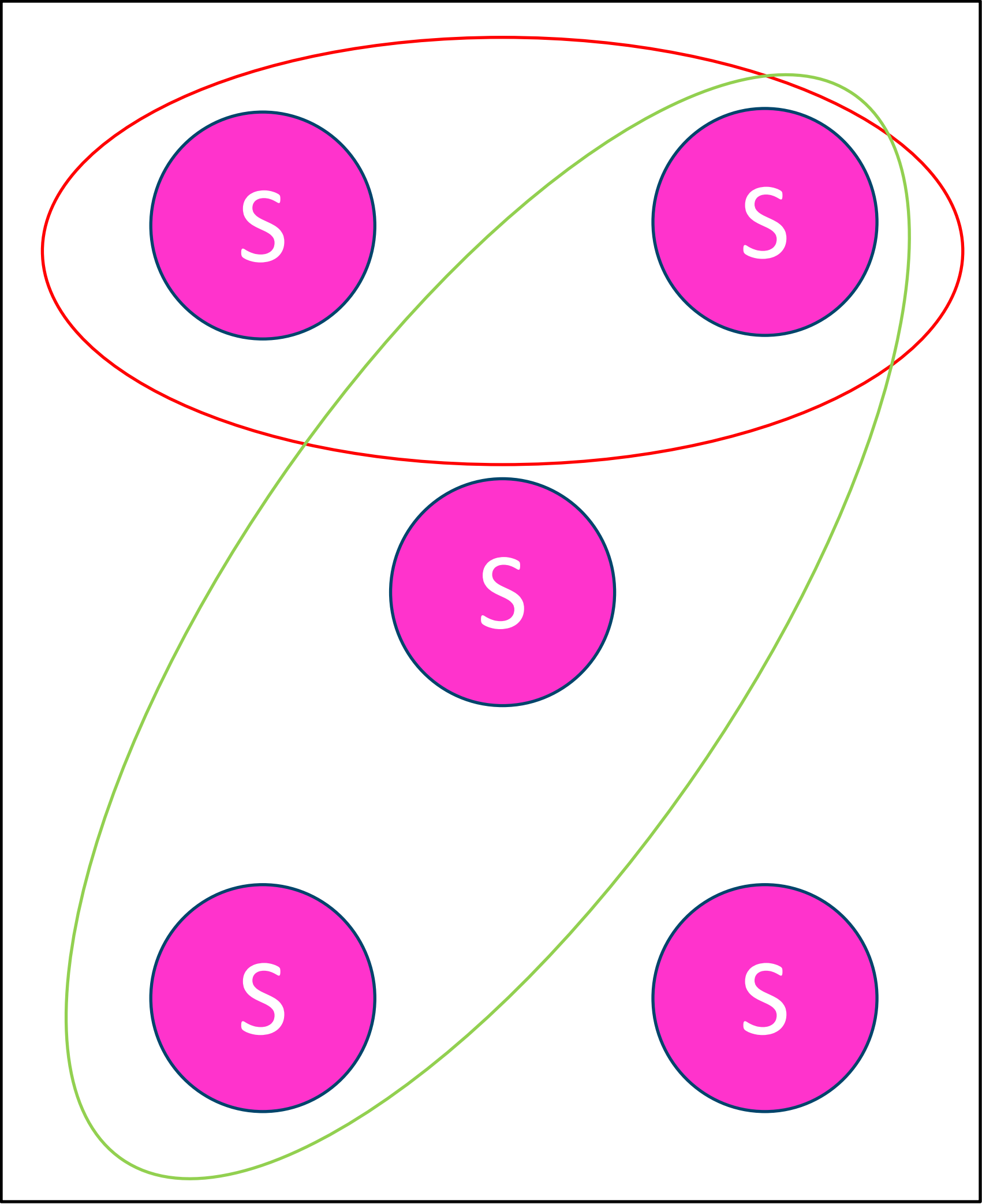
Deep = **HOW** do you
understand it and what are
you going to **DO** with it?
(Concepts)



Concepts



Concepts



Concepts

OAB CSB SNE TFL IXO

Concepts

OAB CSB SNE TFL IXO

O ABC SBS NETFLIX O

Level 1

*Activate & Associate
Knowledge*



Level 1

*Activate & Associate
Knowledge*



Level 1

*Activate & Associate
Knowledge*



Level 1

*Activate & Associate
Knowledge*



Level 1

*Activate & Associate
Knowledge*

SOUP



Level 1

*Activate & Associate
Knowledge*



CONCEPT FORMATION VERBS

RECALL

SUMMARIZE

CONTRAST

DEFEND

IDENTIFY

DEFINE

RESTATE

CLASSIFY

QUESTION

CRITICIZE

TEST

EXPLAIN

ORDER

RECOGNIZE

ASSOCIATE

DECONSTRUCT

DEBATE

HYPOTHESIZE

CONCEPT FORMATION VERBS

RECALL

SUMMARIZE

CONTRAST

DEFEND

IDENTIFY

DEFINE

RESTATE

CLASSIFY

QUESTION

CRITICIZE

TEST

EXPLAIN

ORDER

RECOGNIZE

ASSOCIATE

DECONSTRUCT

DEBATE

HYPOTHESIZE

Concept Formation (*Deep 1*)

VERBS

Paraphrase

Classify

Distinguish

Interpret

Examine

Express

Summarize

Associate

Restate

Identify

Estimate

Explain

Discuss

Analogize

Concept Formation (*Deep 1*)

GENERAL

Concept Map	Metaphor / Analogy
Turn-to-Tweet	Key Relationship
In Your Own Words	News Report
Diagram	Build a Logo
Classify	Review B4 New
Jigsaw	Generalize

Concept Formation (*Deep 1*)



THINKING ROUTINES

See – Think – Wonder

Zoom In

Chalk Talk

321 Bridge

Explanation Game

Headlines

Word – Phrase - Sentence

Basic Learning Process

Retrieval (Surface)

Concept Formation (Deep 1)

Concept Shifting (Deep 2)

Concept Testing (Deep 3)

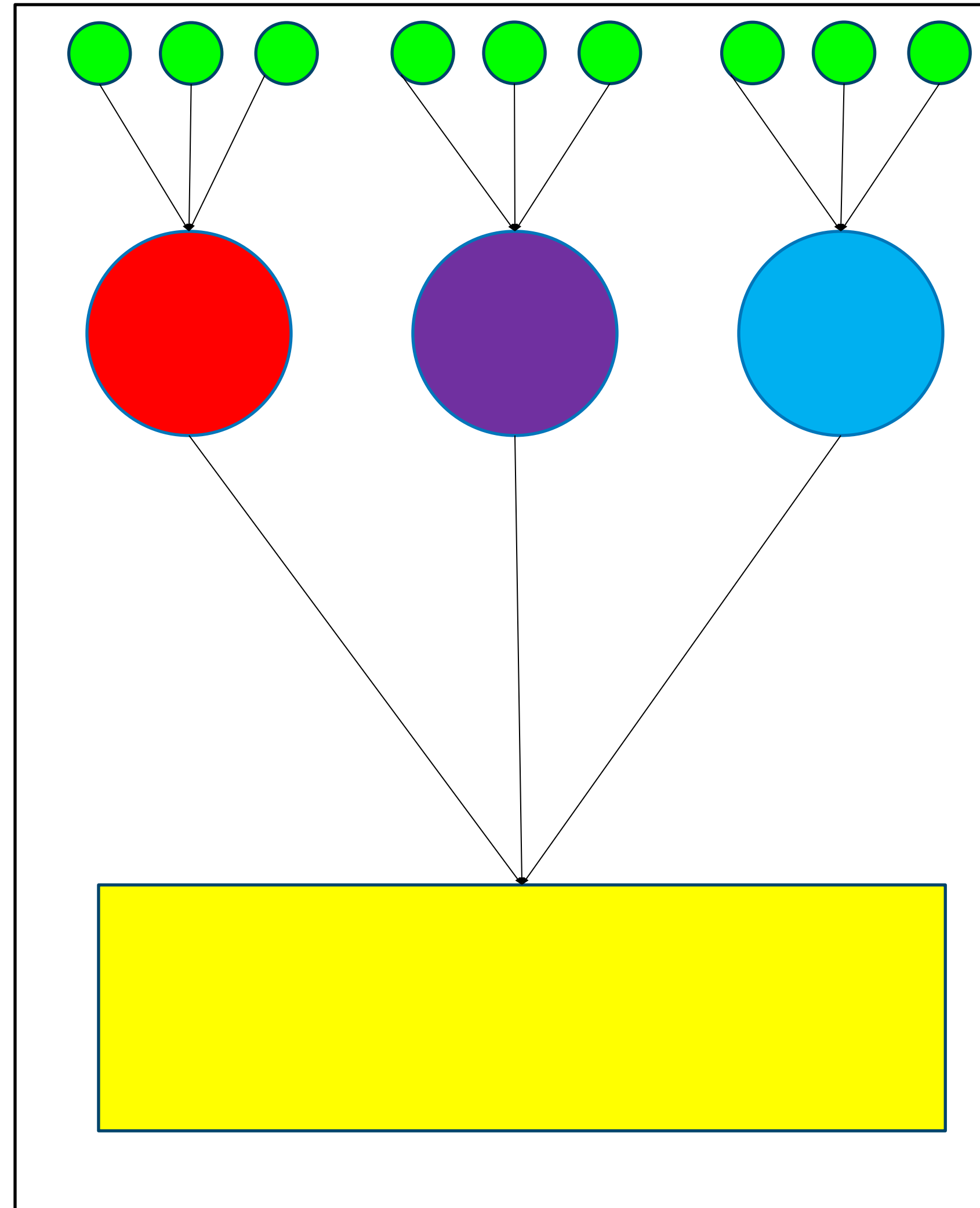
Transformative



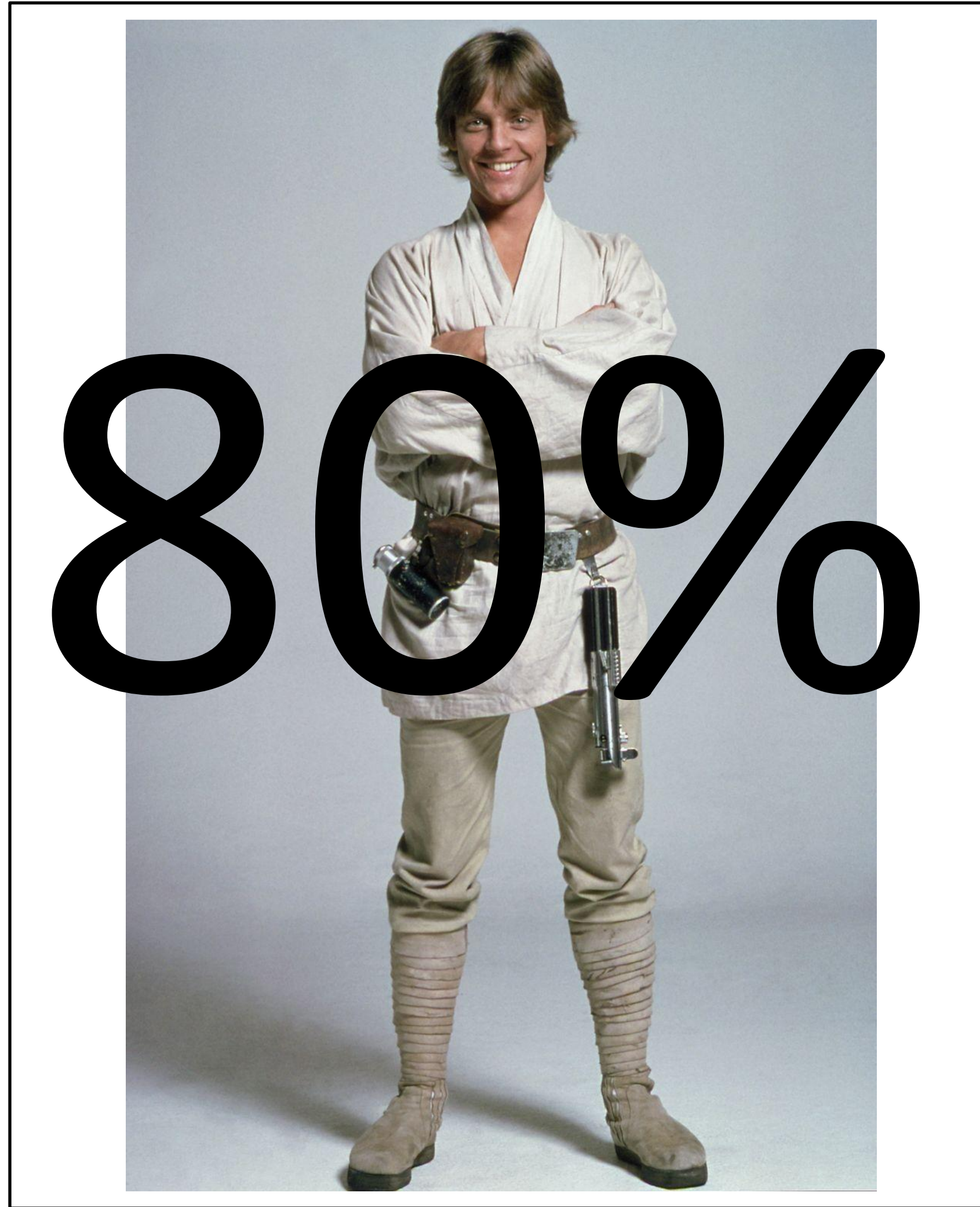
Novice Learning



Novice Learning



Novice Learning



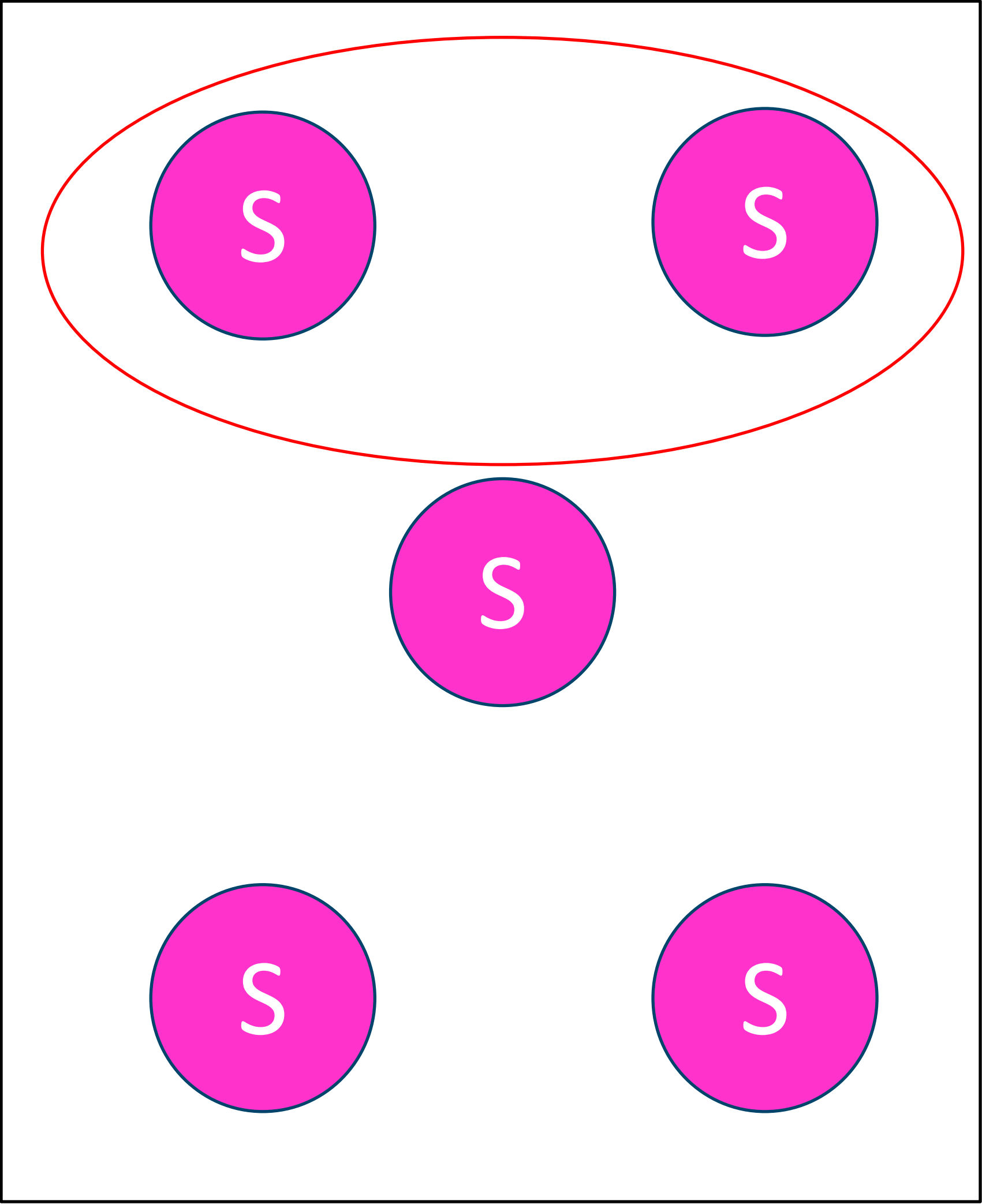
Level 2

*Elaborate & Expand
Concepts*



Concepts

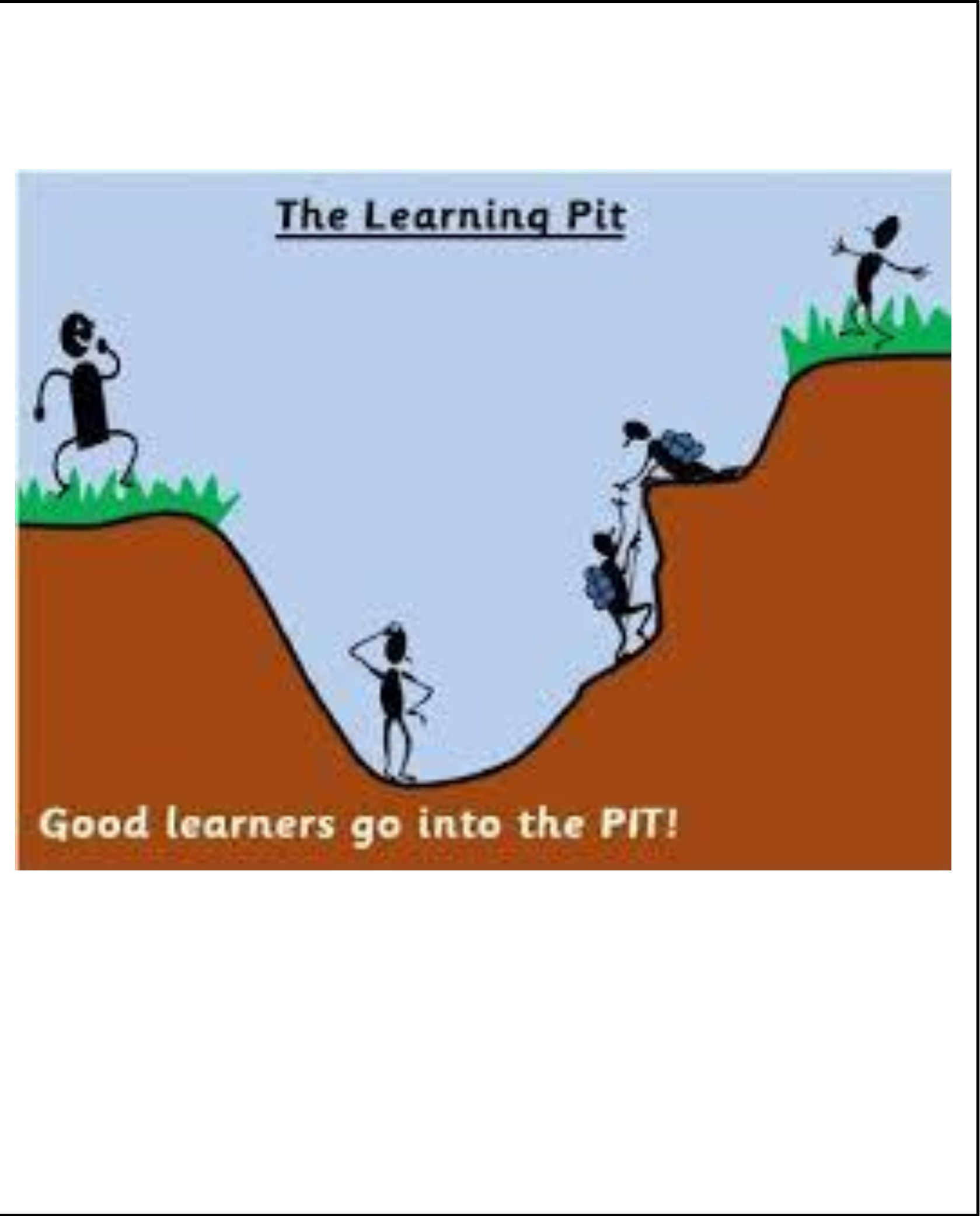
Elaboration & Expansion





The Learning Pit

Concepts – Not Facts!



Level 2

*Elaborate & Expand
Concepts*



CONCEPT SHIFTING VERBS

RECALL

SUMMARIZE

CONTRAST

DEFEND

IDENTIFY

DEFINE

RESTATE

CLASSIFY

QUESTION

CRITICIZE

TEST

EXPLAIN

ORDER

RECOGNIZE

ASSOCIATE

DECONSTRUCT

DEBATE

HYPOTHESIZE

CONCEPT SHIFTING VERBS

RECALL

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IDENTIFY

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RESTATE

CLASSIFY

QUESTION

CRITICIZE

TEST

EXPLAIN

ORDER

RECOGNIZE

ASSOCIATE

DECONSTRUCT

DEBATE

HYPOTHESIZE

Concept Shifting (*Deep 2*)

VERBS

Combine

Contrast

Adapt

Modify

Separate

Question

Criticize

Interrogate

Deconstruct

Discriminate

Appraise

Arrange

Categorize

Re-Build

Concept Shifting (*Deep 2*)

GENERAL

Anti-Examples
Counter-Debate
Self-Question
Critical Incident
Discussion
Break Yourself

Interview
Survey
Devil's Advocate
Propaganda
Peer Teaching
Discussion

Concept Shifting (*Deep 2*)



THINKING ROUTINES

G – S – C – E

Connect – Extend –
Challenge

The 4Cs

I used to think...Now I
think

Circle of Viewpoints

Basic Learning Process

Retrieval (Surface)

Concept Formation (Deep 1)

Concept Shifting (Deep 2)

Concept Testing (Deep 3)

Adaptive Transfer

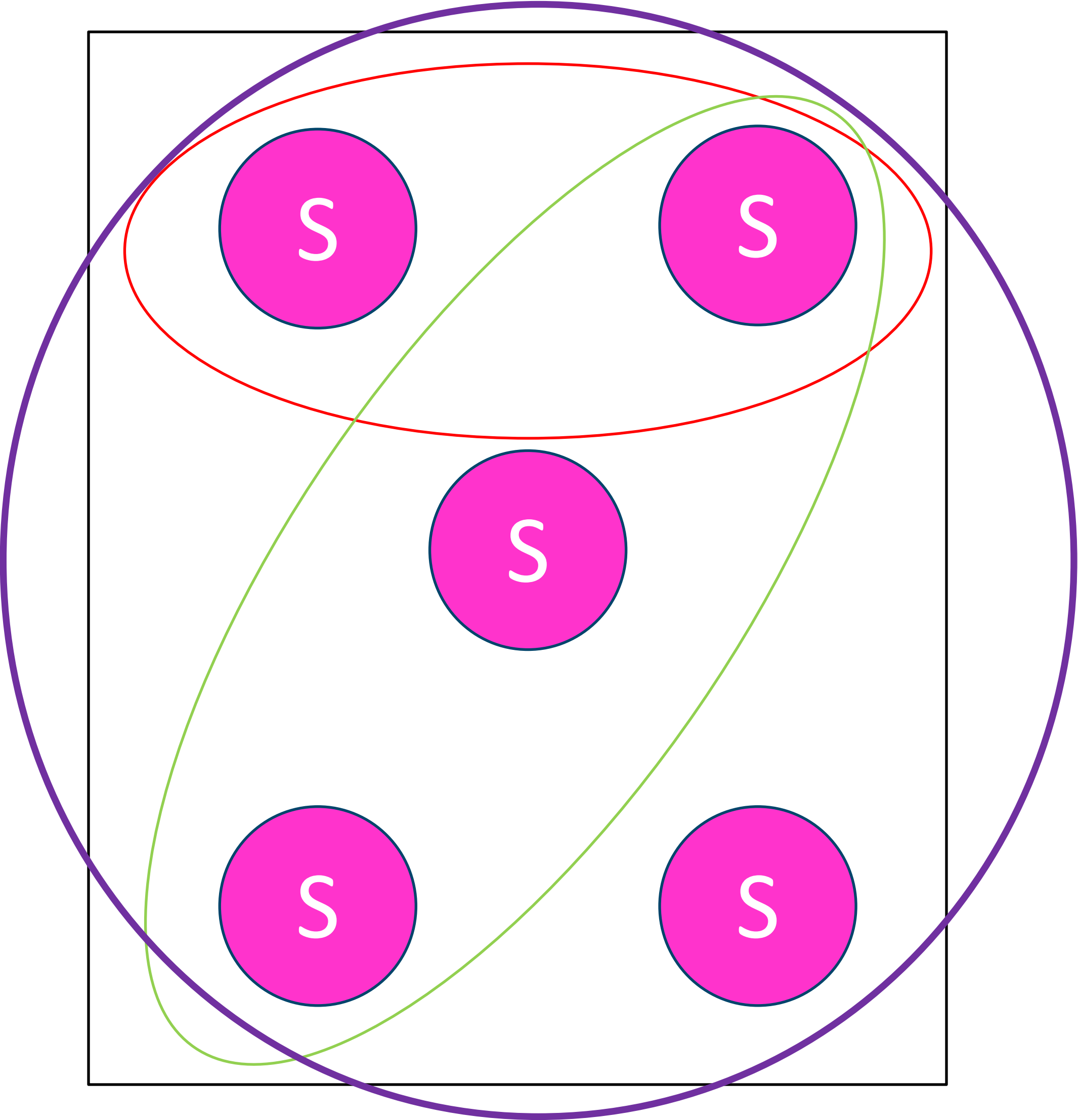


Level 3

Apply & Personalize



Concepts



Concept Testing (*Deep 3*)

GENERAL

What would happen if...

Design

Experiment

Creative Expression

Build

Convince Me

Invent

Self-Reflection

How would you overcome

Simulation

Outreach

Forecast

Concept Testing (*Deep 3*)



THINKING ROUTINES

Micro-Lab

Red Light – Yellow Light

Claim – Support –
Question

Does it Fit?

Creative Questions

Why Say That?

Basic Learning Process

Retrieval (Surface)

Concept Formation (Deep 1)

Concept Shifting (Deep 2)

Concept Testing (Deep 3)

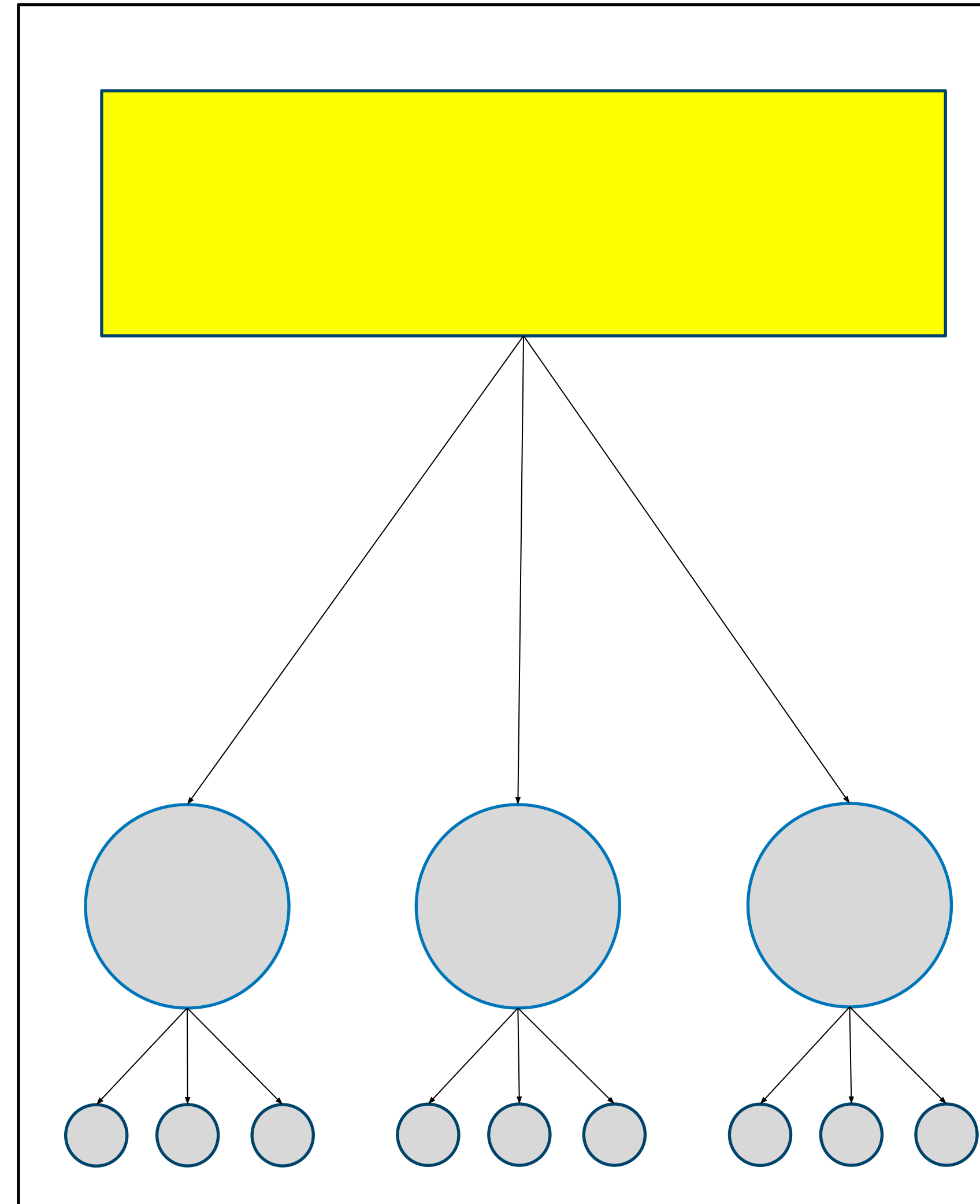
Transformative



Expert Learning



Expert Learning



Expert Learning

20%



Basic Learning Process

Retrieval (Surface)

Concept Formation (Deep 1)

Concept Shifting (Deep 2)

Concept Testing (Deep 3)

Transformative



Basic Learning Process

Retrieval (Surface)

Concept Formation (Deep 1)

Concept Shifting (Deep 2)

Concept Testing (Deep 3)

Transformative



Basic Learning Process

Retrieval (Surface)

Concept Formation (Deep 1)

Concept Shifting (Deep 2)

Concept Testing (Deep 3)

Transformative



Basic Learning Process

Retrieval (Surface)

Concept Formation (Deep 1)

Concept Shifting (Deep 2)

Concept Testing (Deep 3)

Transformative



Big Secret

EXPLICIT

&

PRACTICED



Big Secret

What do I need to know here?

How does X relate to this?

How might we use X to uncover this?

Where have we seen these concepts before and how did we apply them?

What relationships do I see here?

Use the context to predict: what would be expected of me here?



Big Secret
METACOGNITION



Can it be Taught?

*Is Note-Summarization a
Good Technique?*

90% knew

30% used



Can it be Taught?

*How do you effectively
summarize notes?*

90% knew

30% used



Can it be Taught?

*How do you effectively
summarize notes?*

60% knew

30% used



Can it be Taught?

*Why is Note-Summary a
Good Technique?*

60% knew

30% used



Can it be Taught?

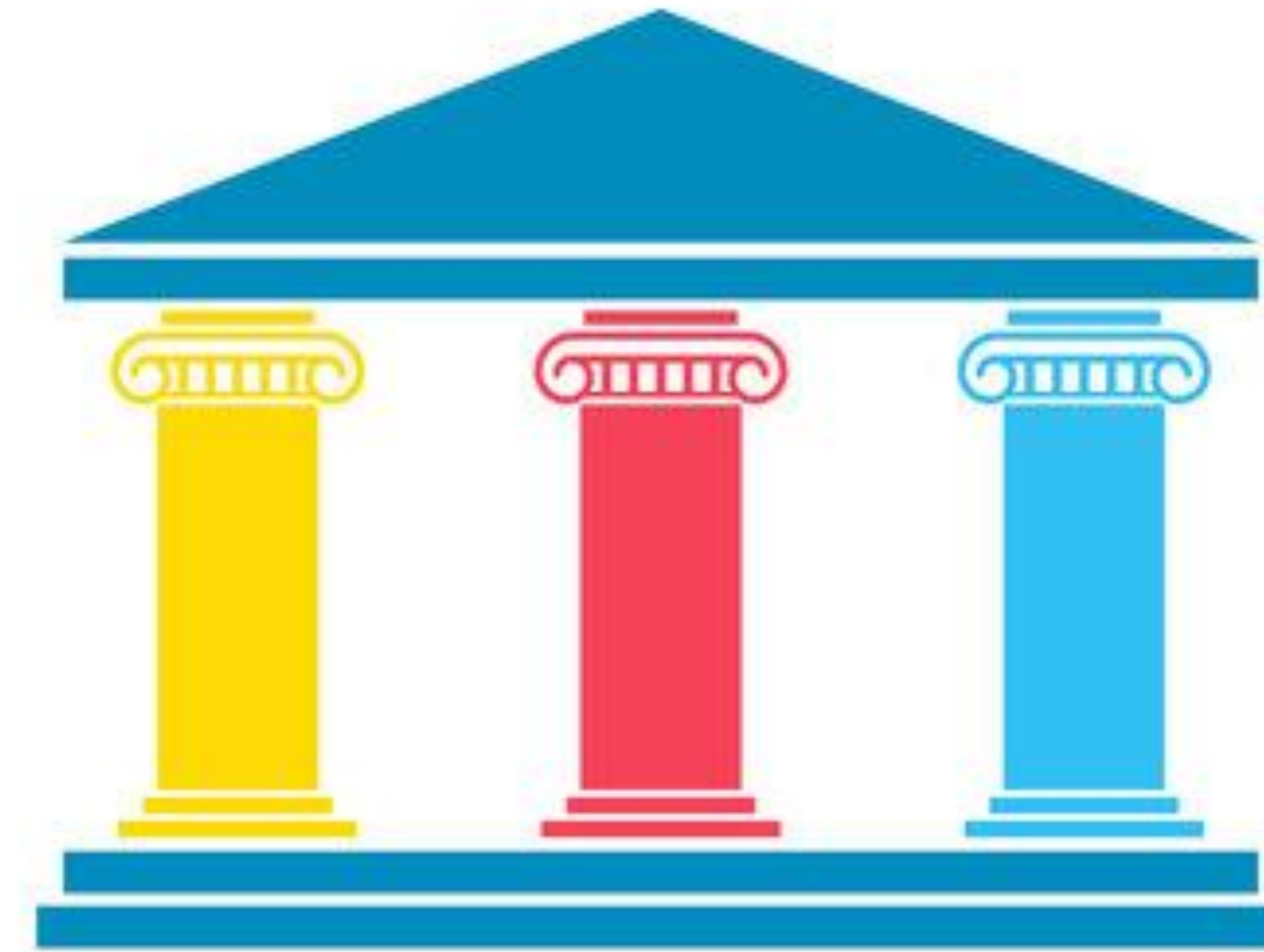
*Why is Note-Summary a
Good Technique?*

30% knew

30% used

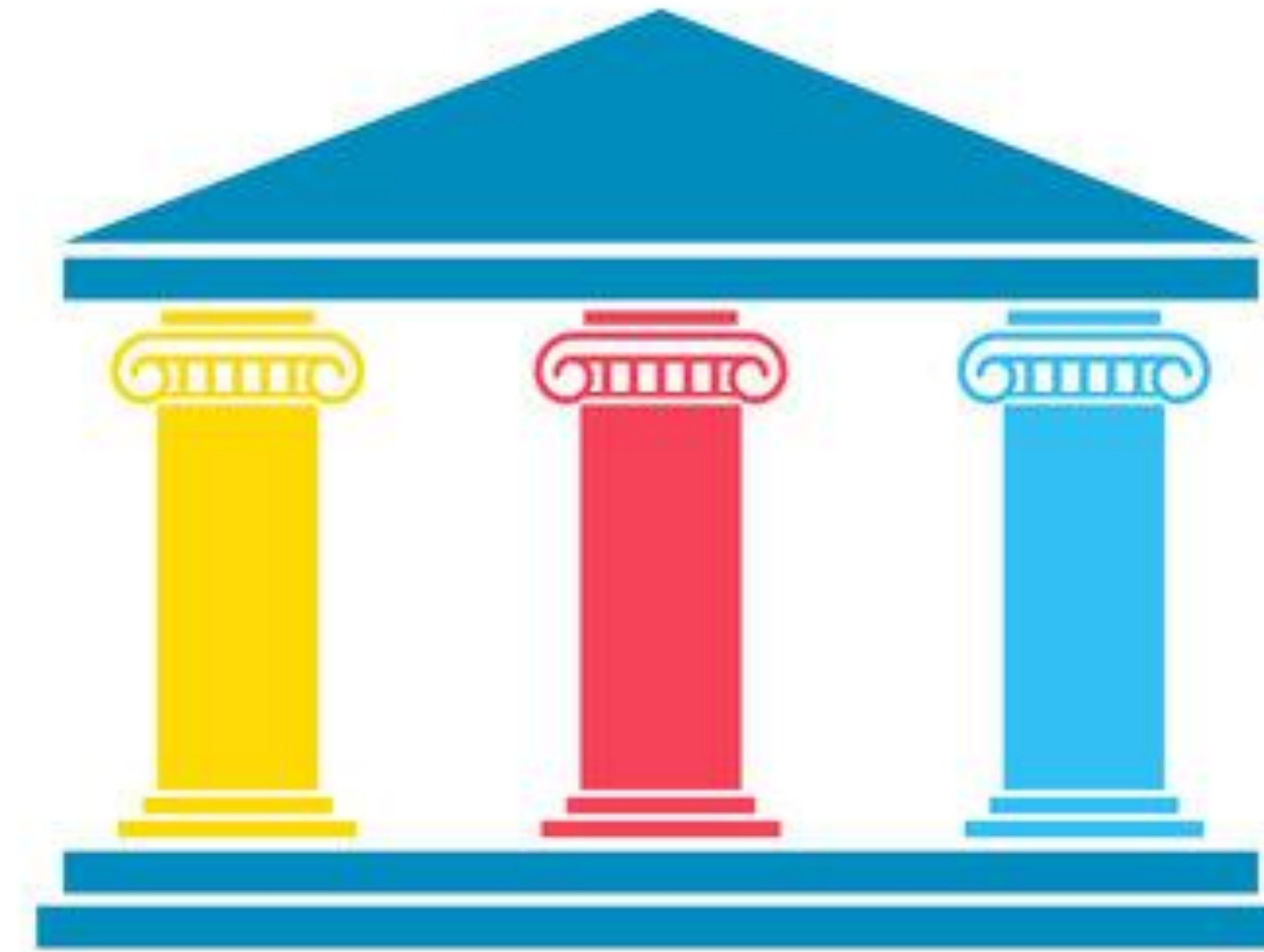


3 PILLARS OF METACOGNITION



3 PILLARS OF METACOGNITION

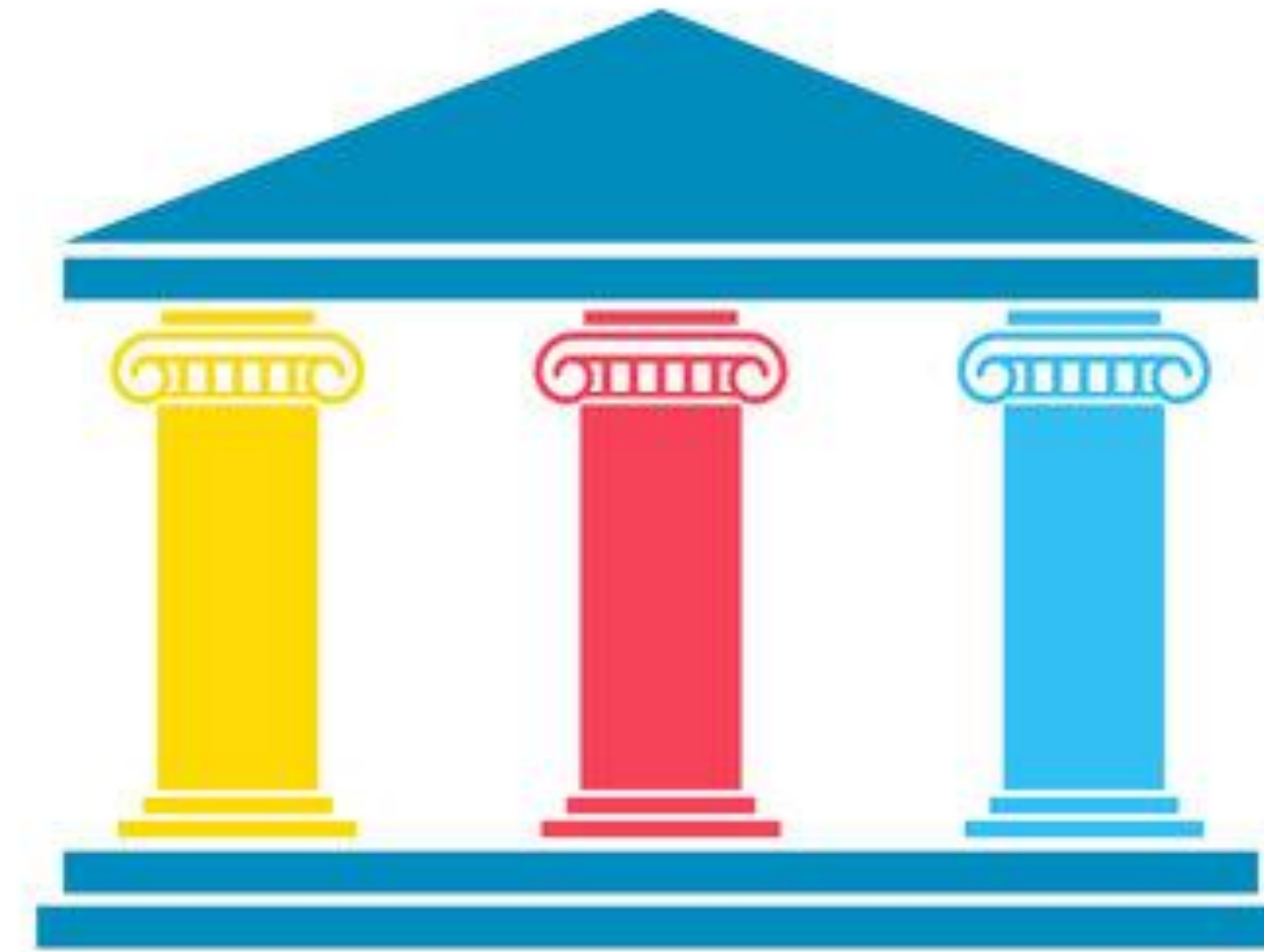
Strategies



3 PILLARS OF METACOGNITION

Strategies

Context

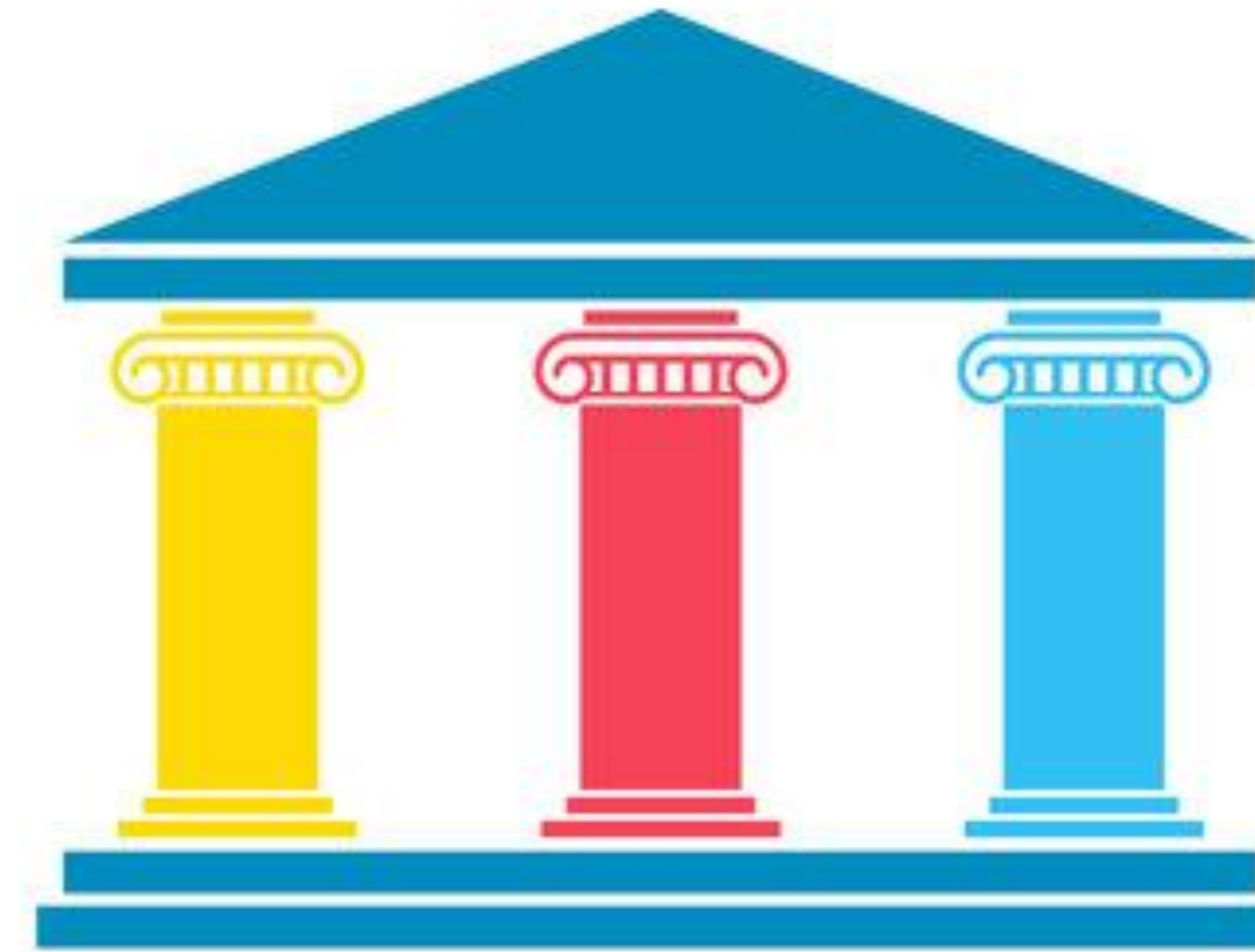


3 PILLARS OF METACOGNITION

Strategies

Context

*Deep Knowledge of the
Learning Process*



So Now Then

the **LEARNING BLUEPRINT**™

BRING THE SCIENCE OF LEARNING TO YOUR SCHOOL!



**FOR
TEACHERS**
PROFESSIONAL DEVELOPMENT PROGRAM



**FOR
STUDENTS**
YR 9+ METACOGNITION PROGRAM



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SCIENCE OF LEARNING

CONFERENCE 2025

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GOLD SPONSORS

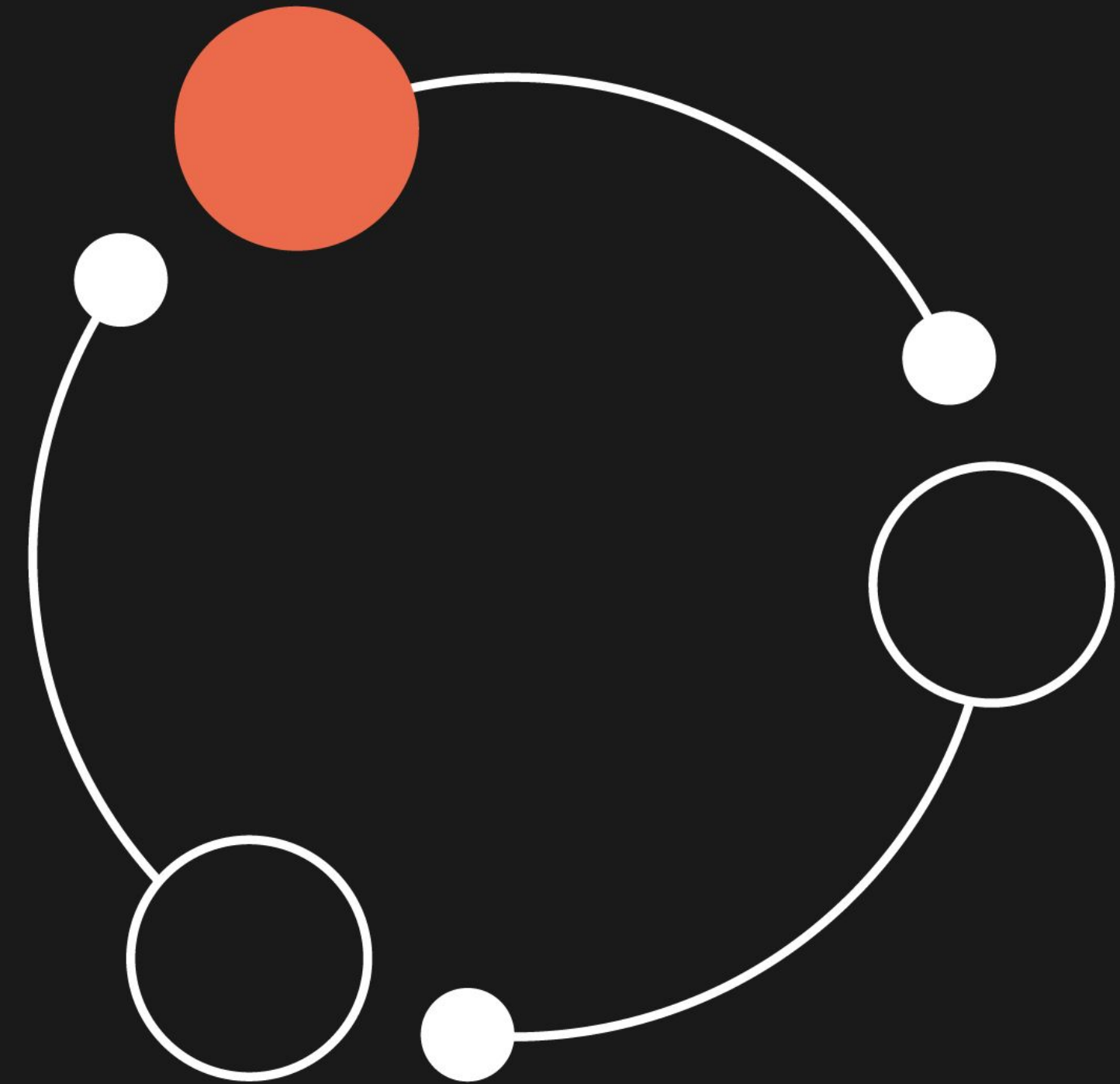


Big Ideas in Responsive Teaching

Bronwyn Ryrie Jones

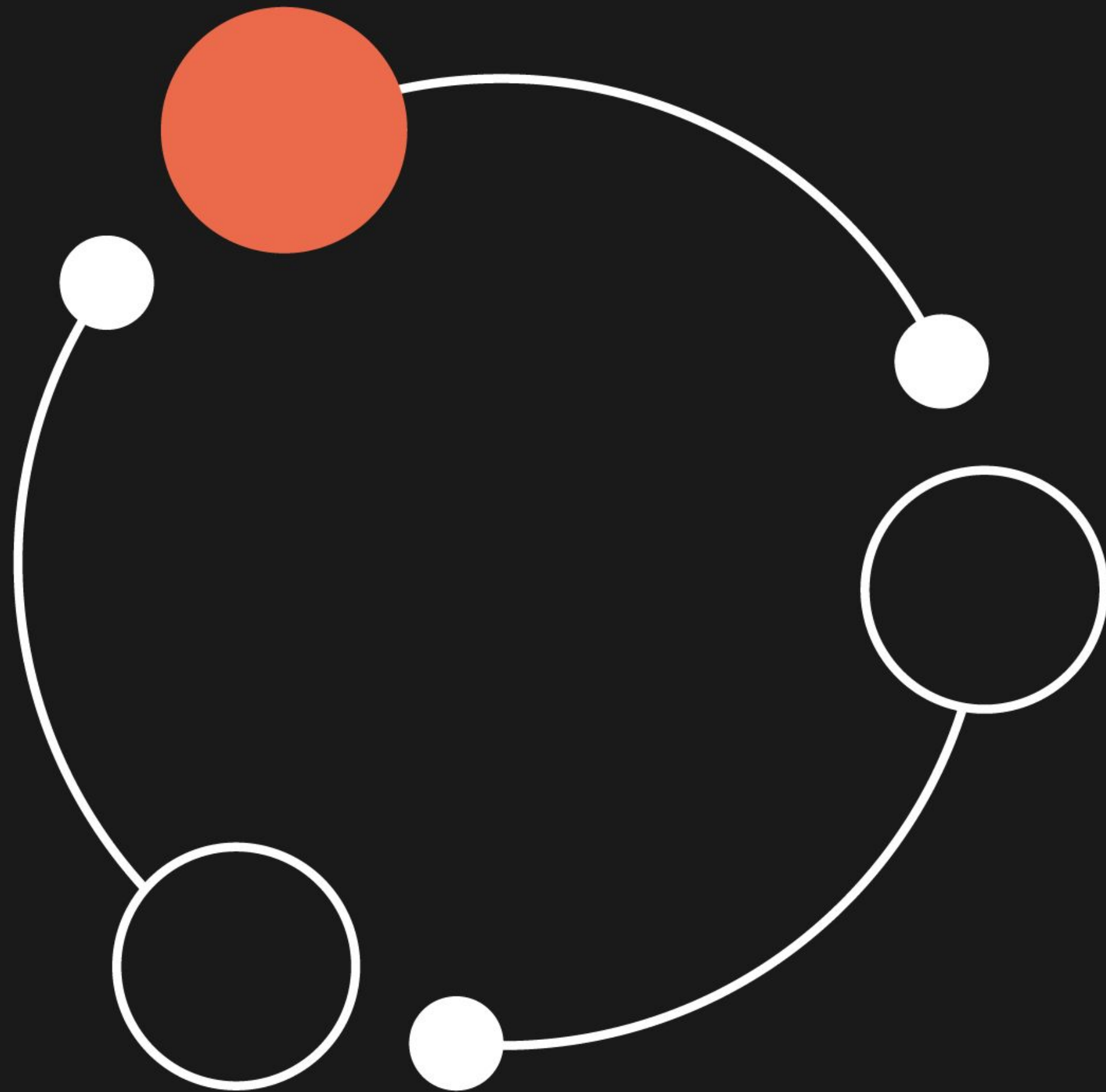
Big ideas in *responsive teaching*

→ Science of Learning Conference









What is
responsive
teaching?

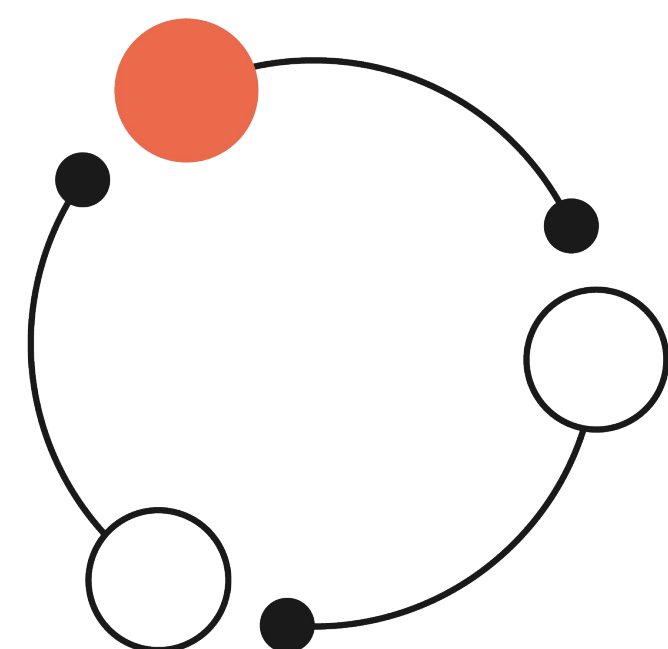
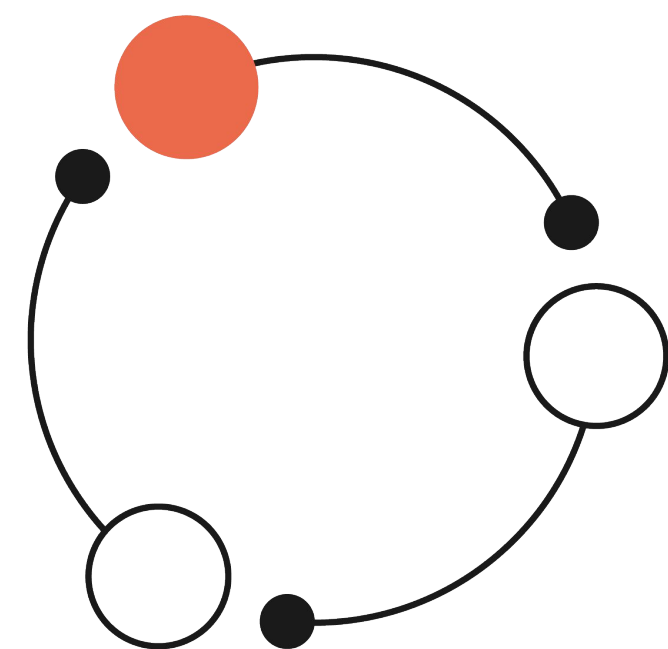
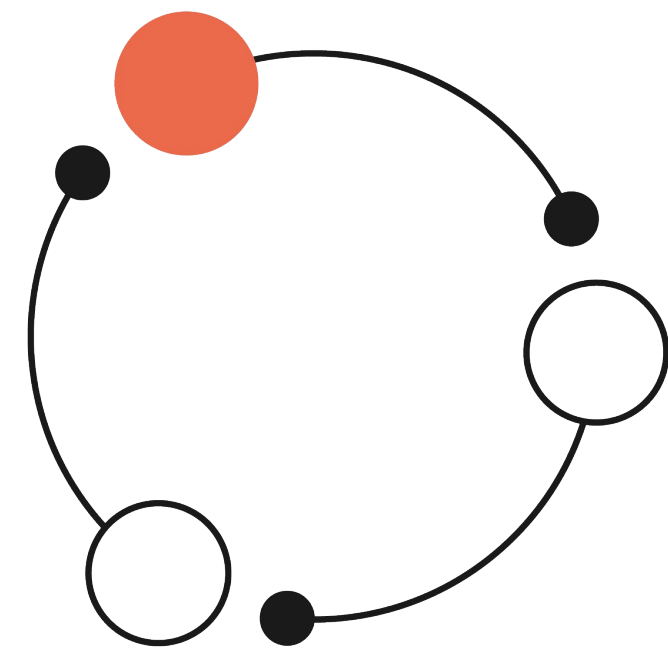
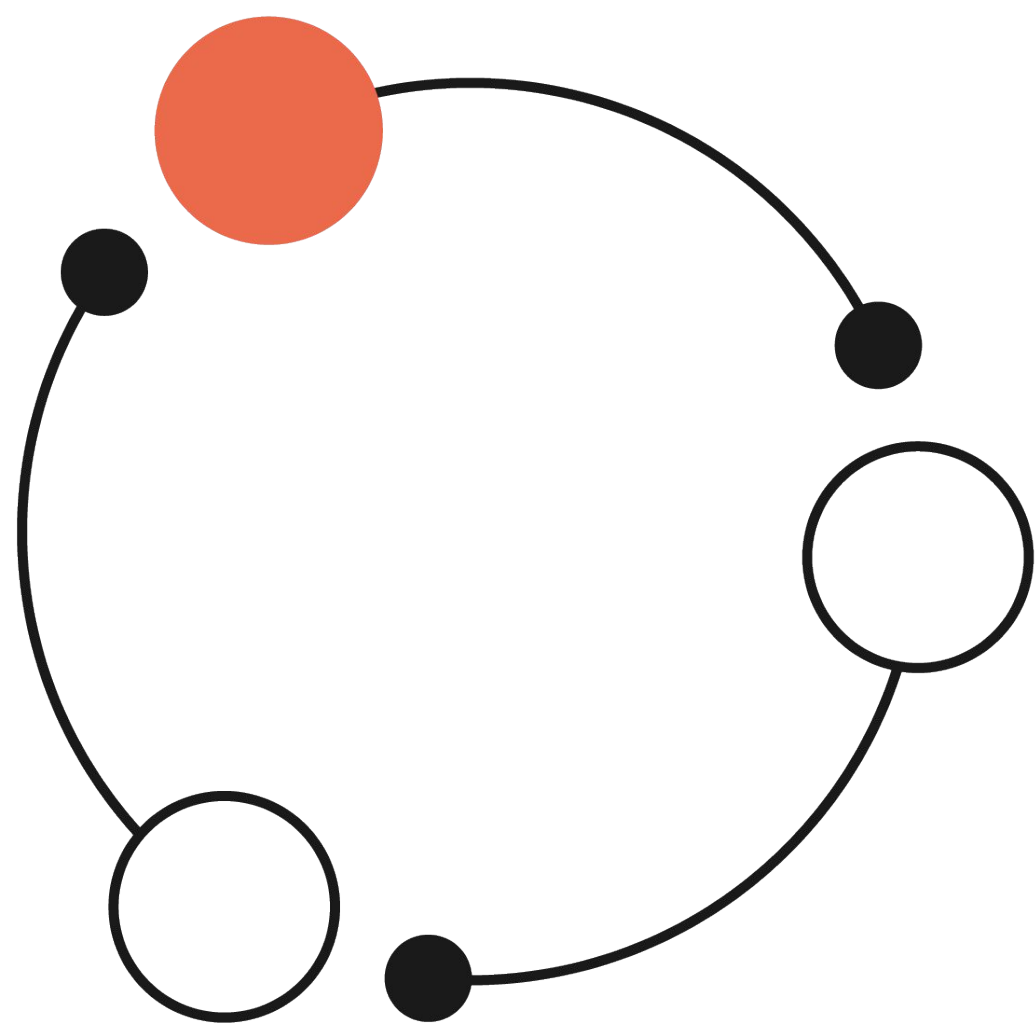


“A really big mistake to call
formative assessment
formative assessment...”

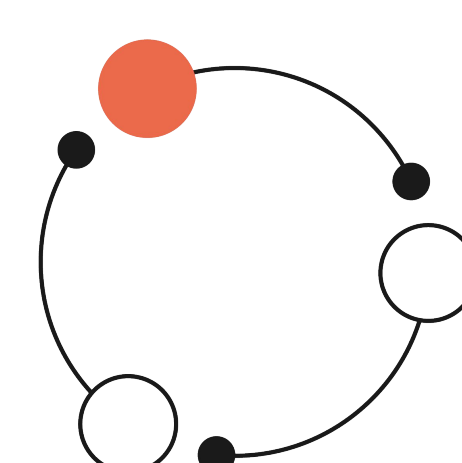
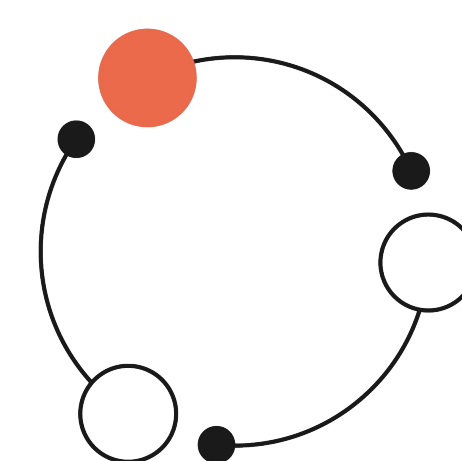
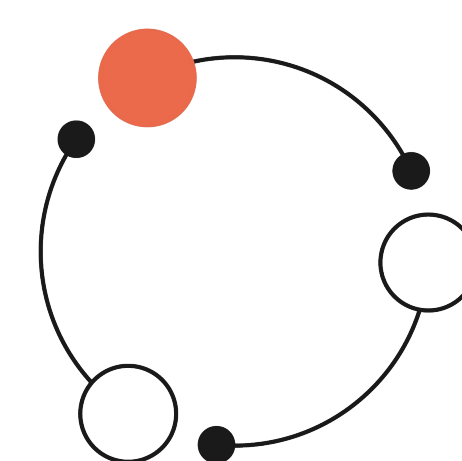
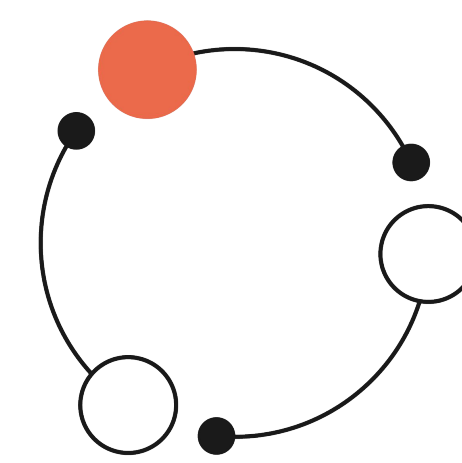
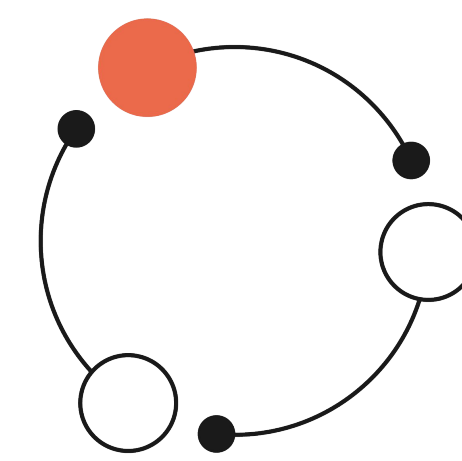


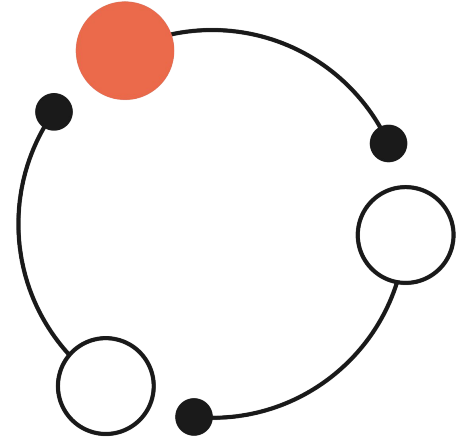
...instead of something
like responsive teaching.”

Dylan Wiliam

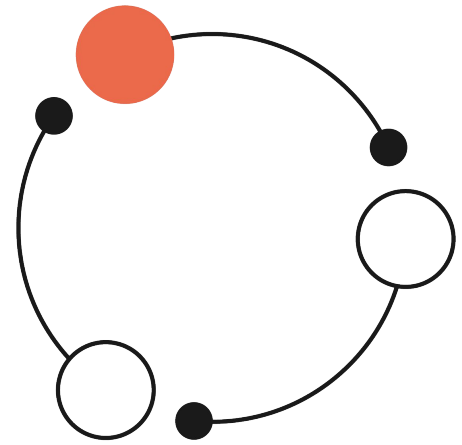


Short
cycle

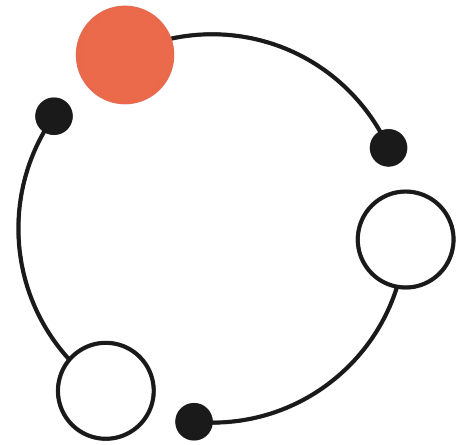




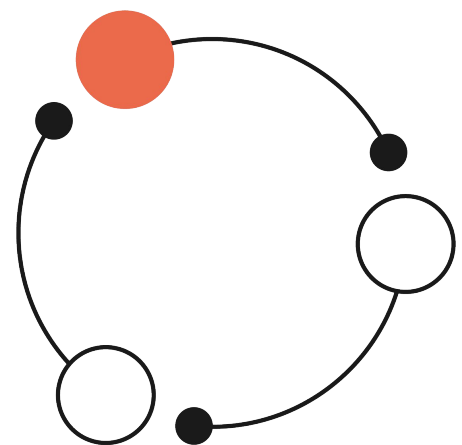
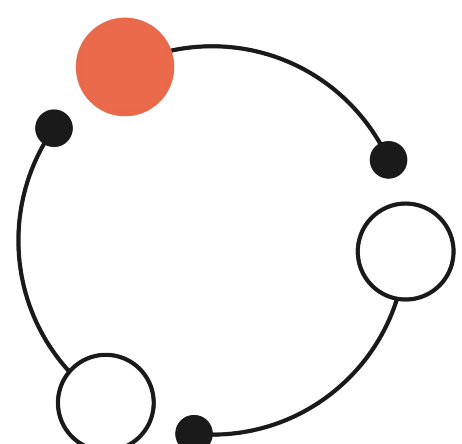
Moment-to-moment

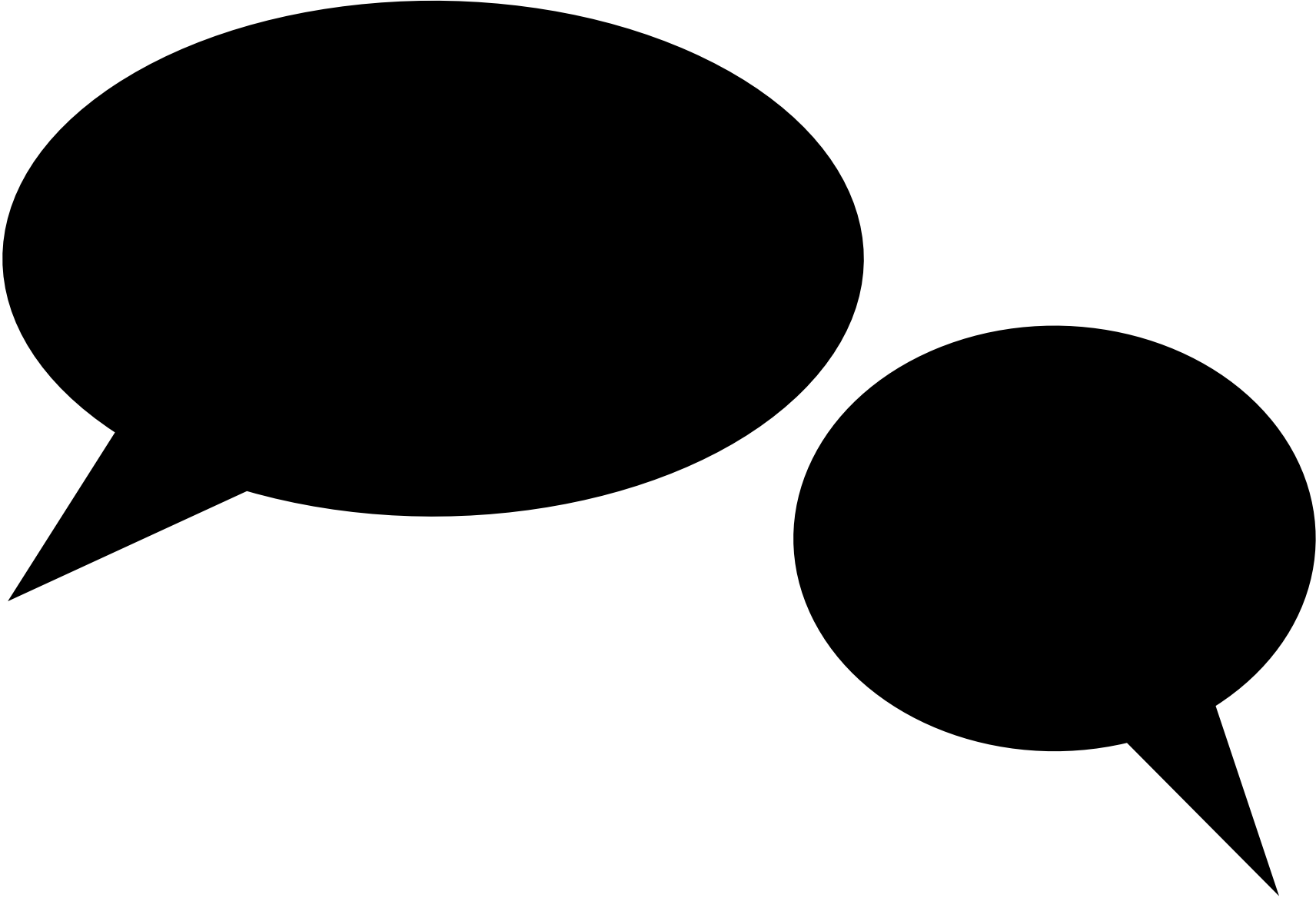


Routine and regular



Better-founded decisions

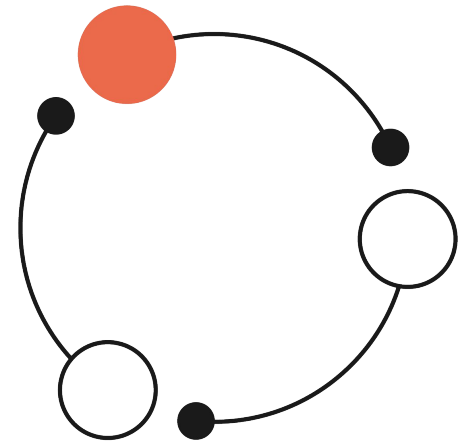




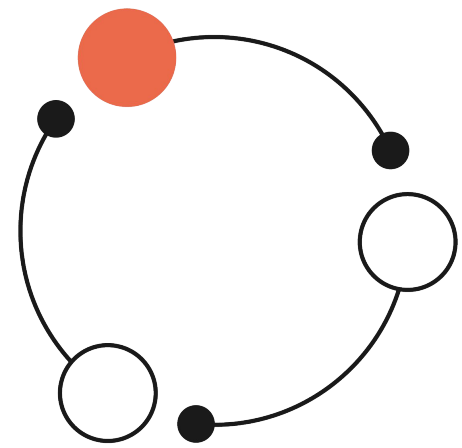
Why should we invest in
responsive teaching?



2 minutes

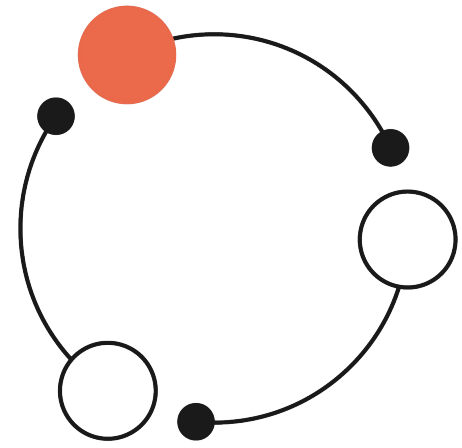


Faster feedback loop to teachers



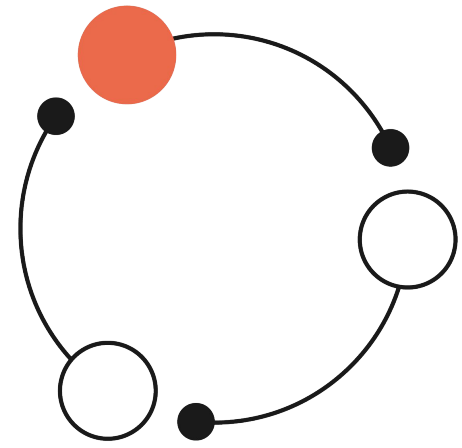
Check students are on track (or not)

Catch and correct errors

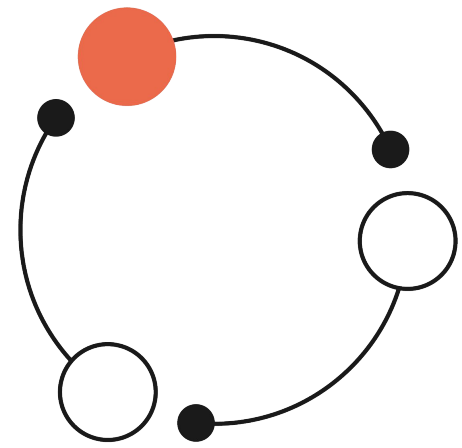


Provide crucial opportunities for rehearsal

Support attention

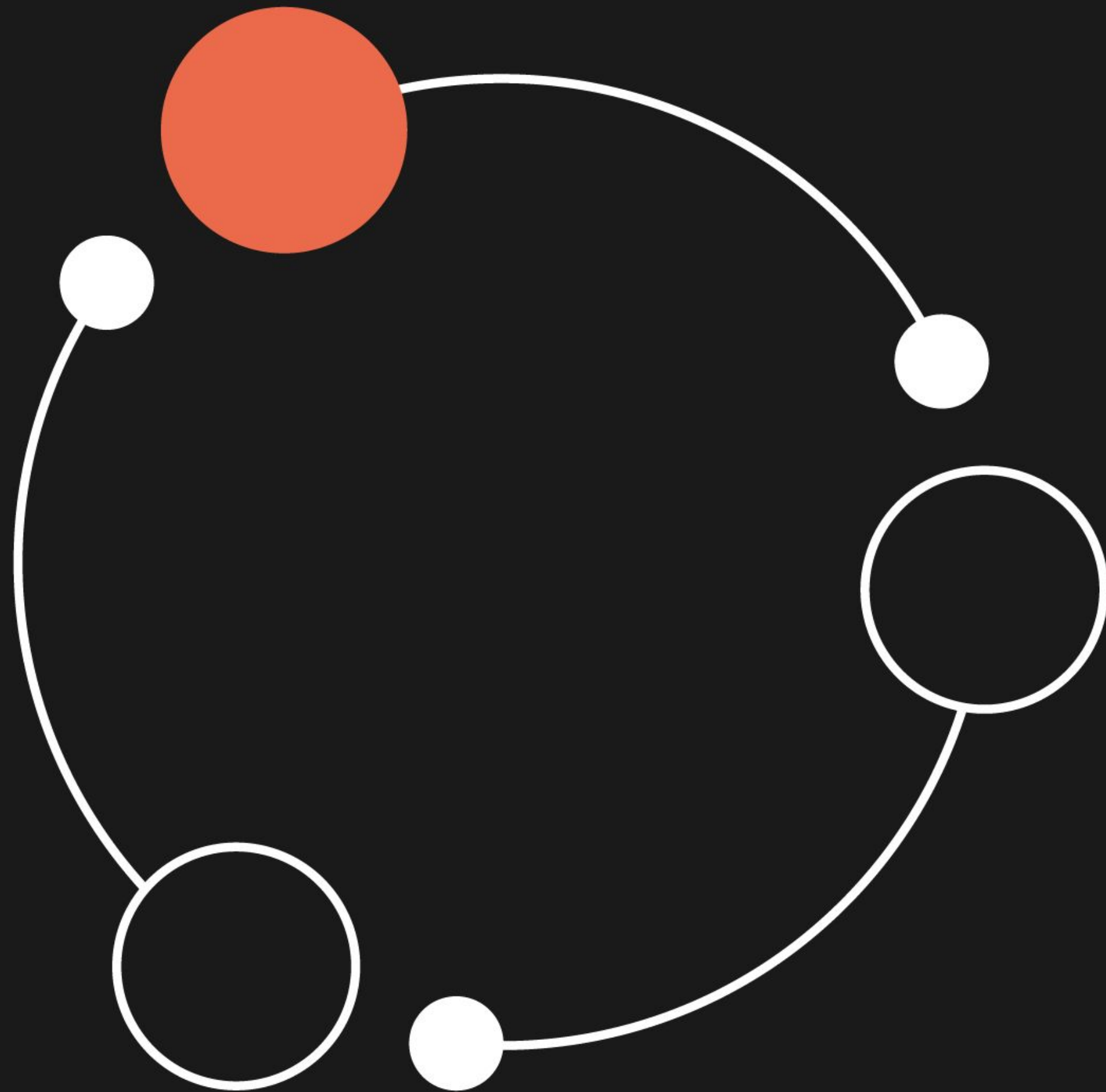


Secure success and build motivation

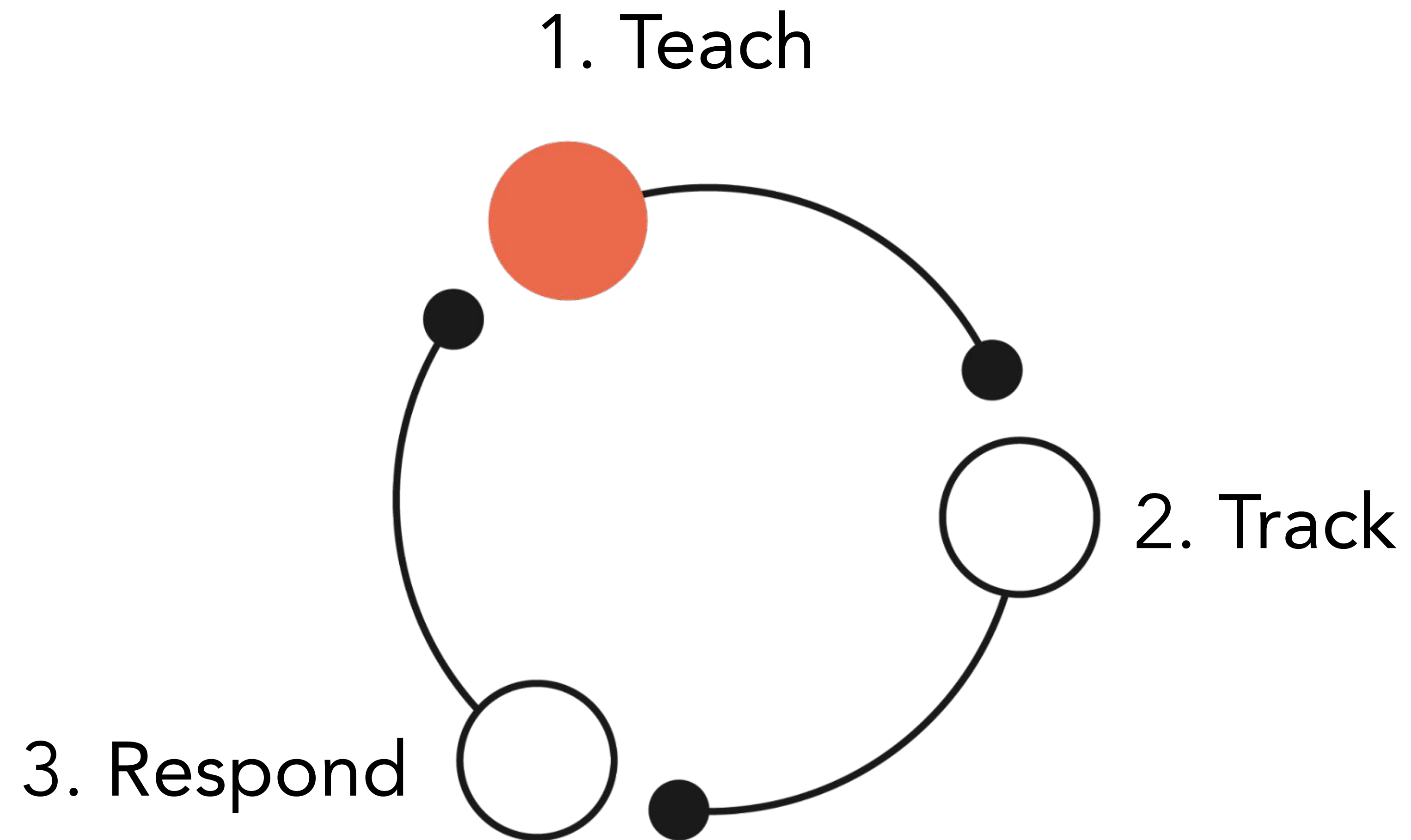


Manufacture opportunities for feedback and behaviour-specific praise

See Mccrea (2020); Wiliam & Leahy (2015); Rosenshine (2012); Lemov (2005)



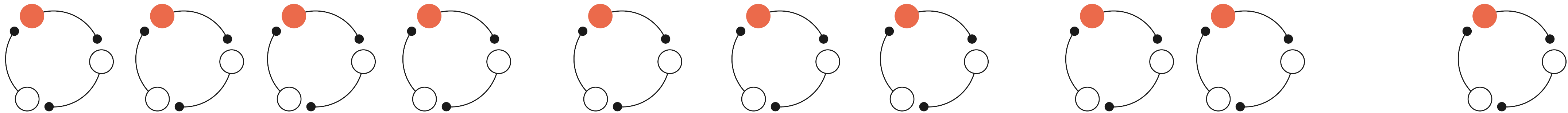
We plan in
cycles



Cycles are *woven* throughout

Learning
intention

Mastery of the
objective





In any given lesson, what makes
this hard?



2 minutes

Behaviour

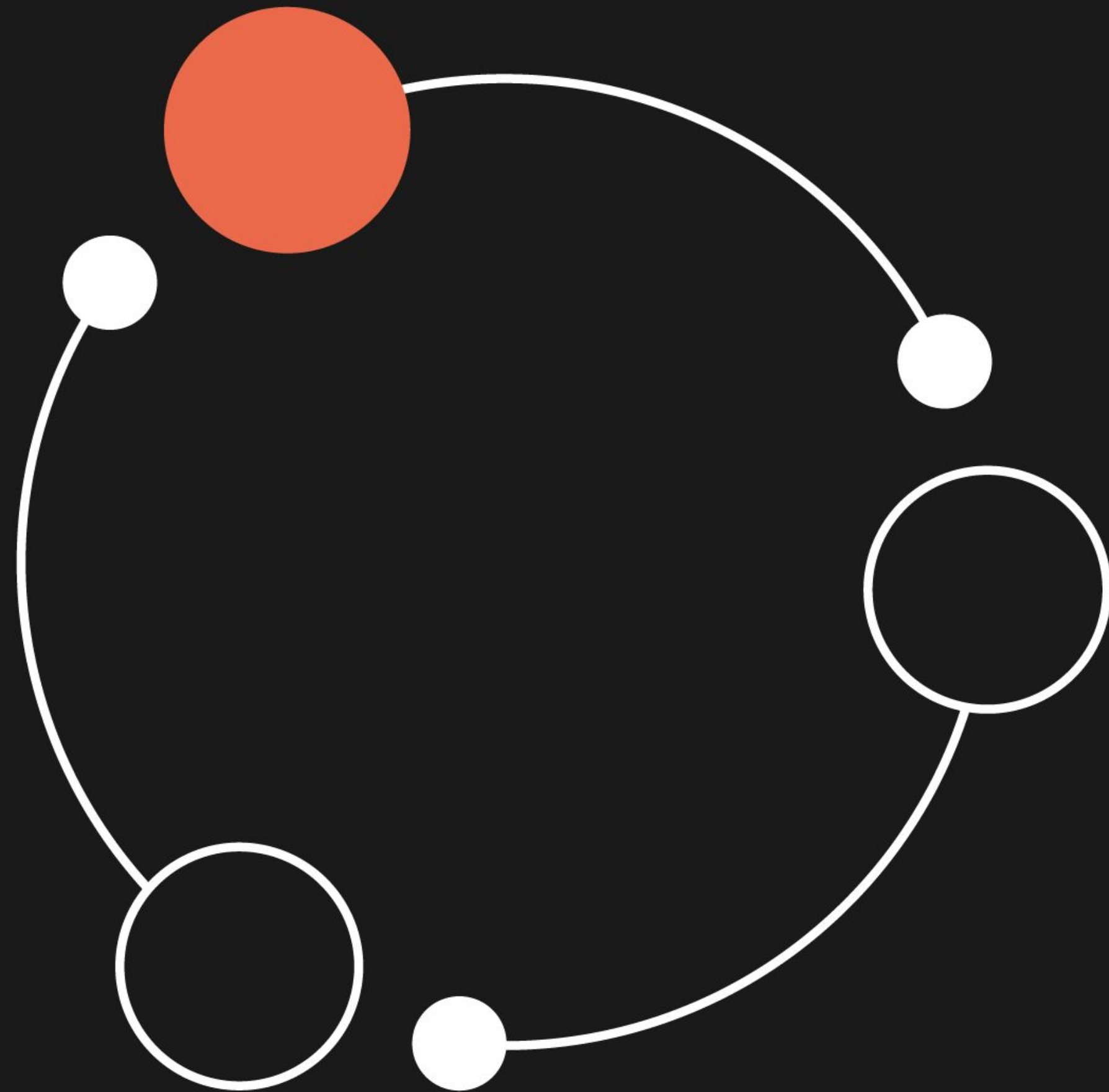
Time

Spread of
knowledge

There's only one
of me.

I get stuck
responding to a few.

Kids aren't confident
to share their
thinking.



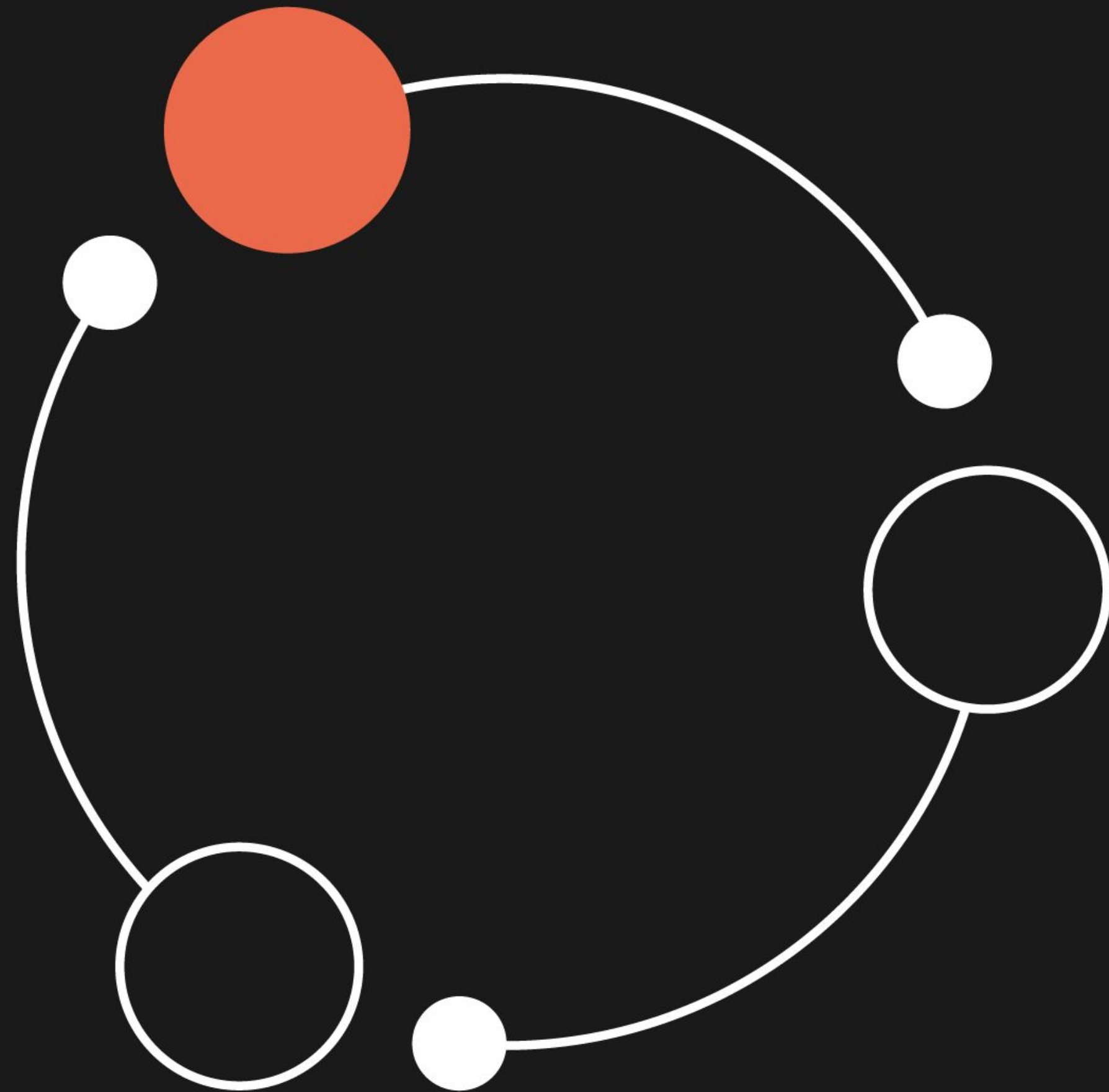
3 barriers on the ground

1. Planning as curriculum content

Curriculum as a process of planning

1. Planning as curriculum content

Chunks are planned, but checks for understanding are not.



Let's look at an
example.



Year 7 HEALTH & WELLBEING

LI: To identify and describe the 5 dimensions of health

DEFINITION OF HEALTH

- 'A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity' (WHO, 1946)

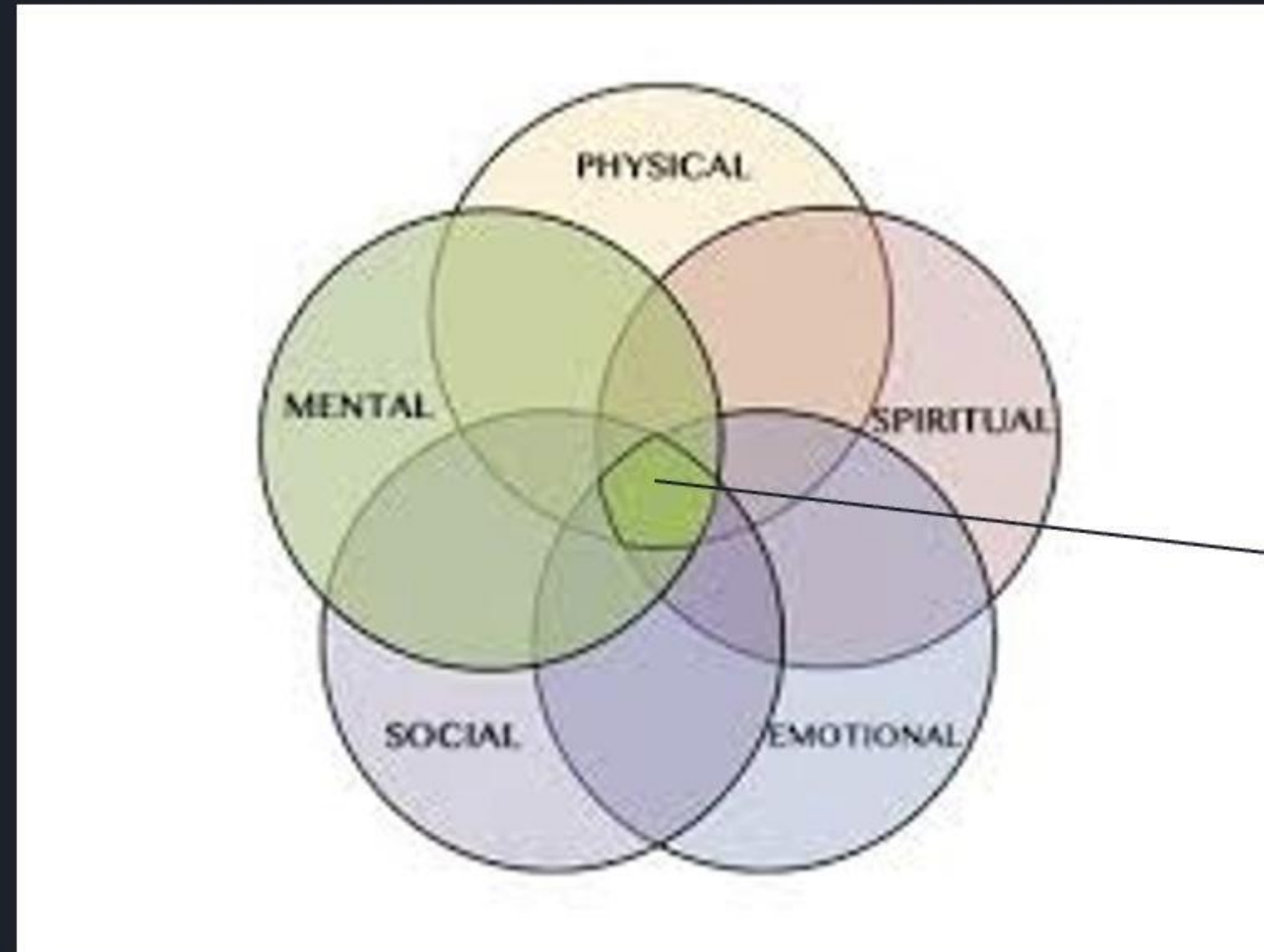
Revised up-to-date definition:

- **A state of complete physical, social, emotional, mental and spiritual well-being and not merely the absence of disease or infirmity. (VC, 2016)**

DIMENSIONS OF HEALTH & WELLBEING

There are 5 dimensions of health and wellbeing that characterize an individual to achieve **optimal health and wellbeing**, they are:

- **Physical**
- **Social**
- **Mental**
- **Spiritual**
- **Emotional**



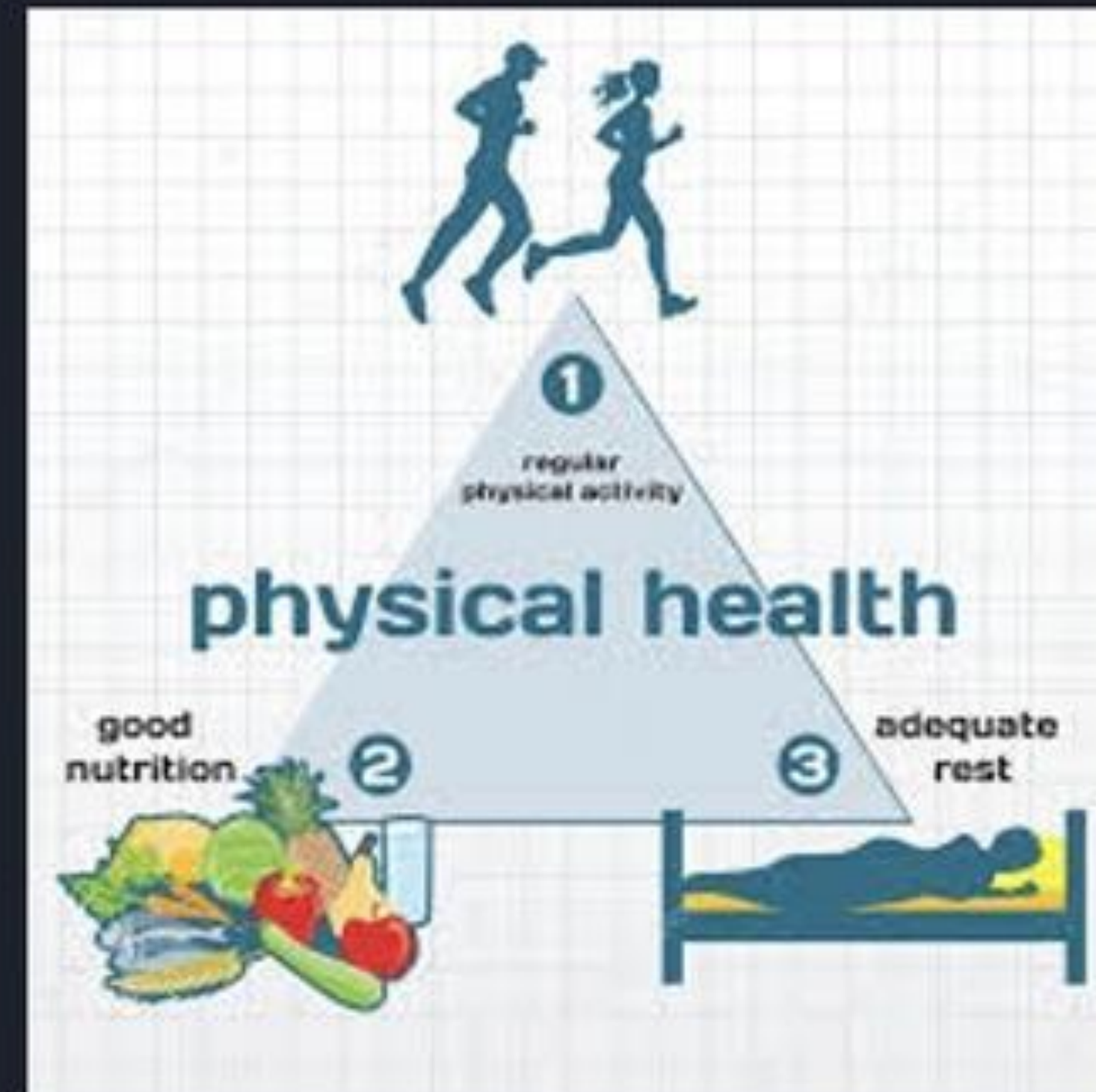
‘Optimal Health’

Health and wellbeing is characterised by an equilibrium in which an individual feels happy, healthy, capable and engaged.

PHYSICAL HEALTH & WELLBEING

Physical health and well-being refers to the **functioning of the body and its systems** including the ability to complete day to day tasks.

- Healthy body weight
- Adequate fitness levels
- Strong immune system
- Free from illness and diseases
- Adequate energy levels





SOCIAL HEALTH & WELLBEING



Social health and wellbeing refers to the ability to form and maintain meaningful and satisfying relationships with others and ability to manage or adapt appropriately to different social situations.

- Supportive and productive social network of friends
- Supportive and well-functioning family
- Ability to manage or adapt appropriately to different social situations (social roles)
- Effective communication with others



EMOTIONAL HEALTH & WELLBEING

Emotional health and wellbeing refers to to the ability to express feelings in a positive way.

- Having a high level of resilience (ability to 'bounce back' after a difficult moment in life)
- Express, adapt and manage emotions



MENTAL HEALTH & WELLBEING

Mental health and wellbeing is the current state of the mind or brain and it relates to the ability to **think and process information.**

Optimal mental health and wellbeing is:



- Low levels of stress and anxiety
- Positive self esteem (how a person sees themselves)
- High levels of confidence
- Positive thought patterns (optimistic vs half glass empty attitude)

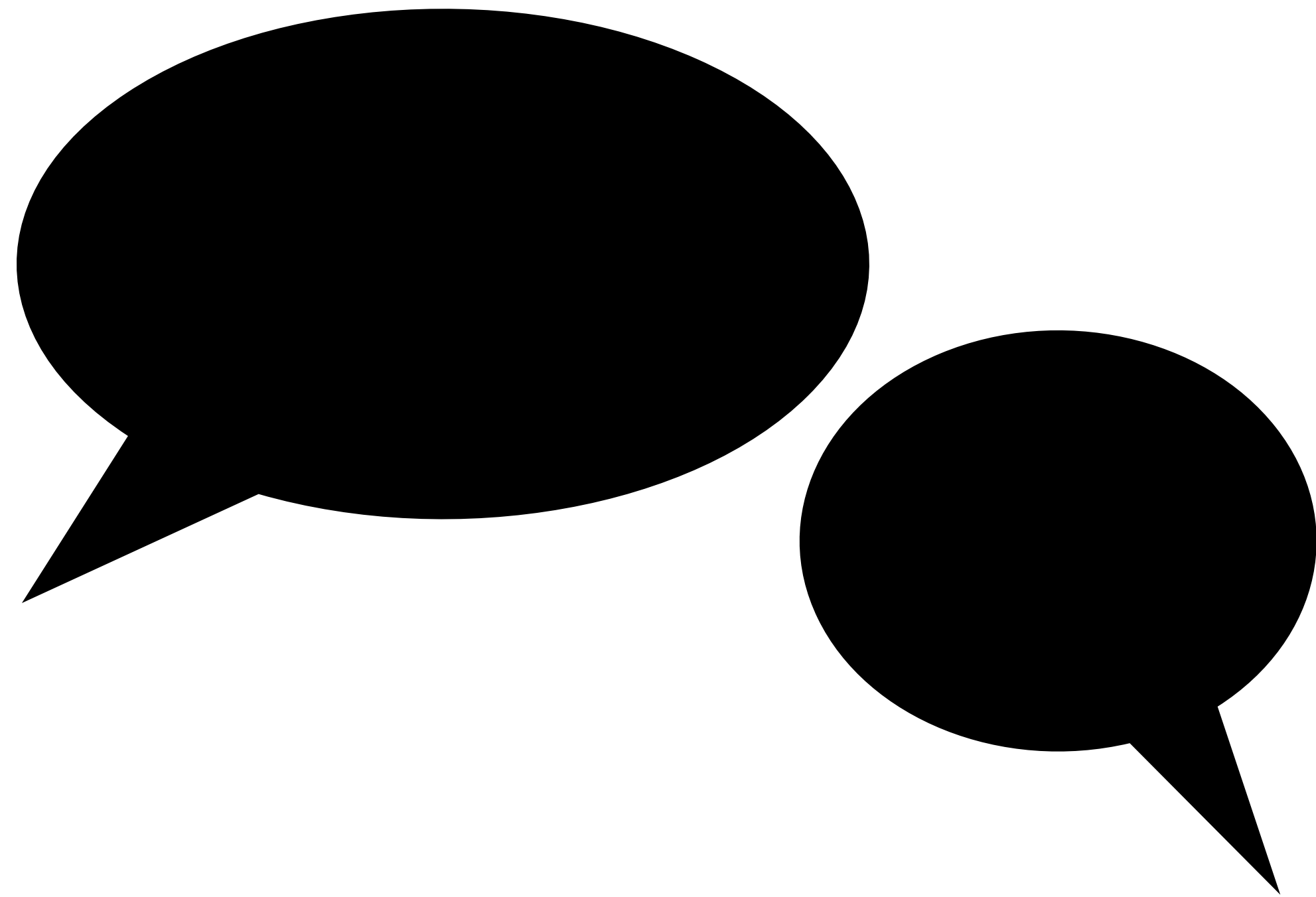
SPIRITUAL HEALTH & WELLBEING

‘Wellbeing of the soul’

Spiritual health and wellbeing relates to ideas, beliefs, values and ethics that arise in the human conscience.

Values: relates to what an individual feels is important in life (education, family, fun, wealth, career success, acceptance).

Beliefs: relates to what an individual feels to be true or right even though the belief may be unproven.



What might happen?

1. Planning as curriculum content

Chunks are planned, but checks for understanding are not.

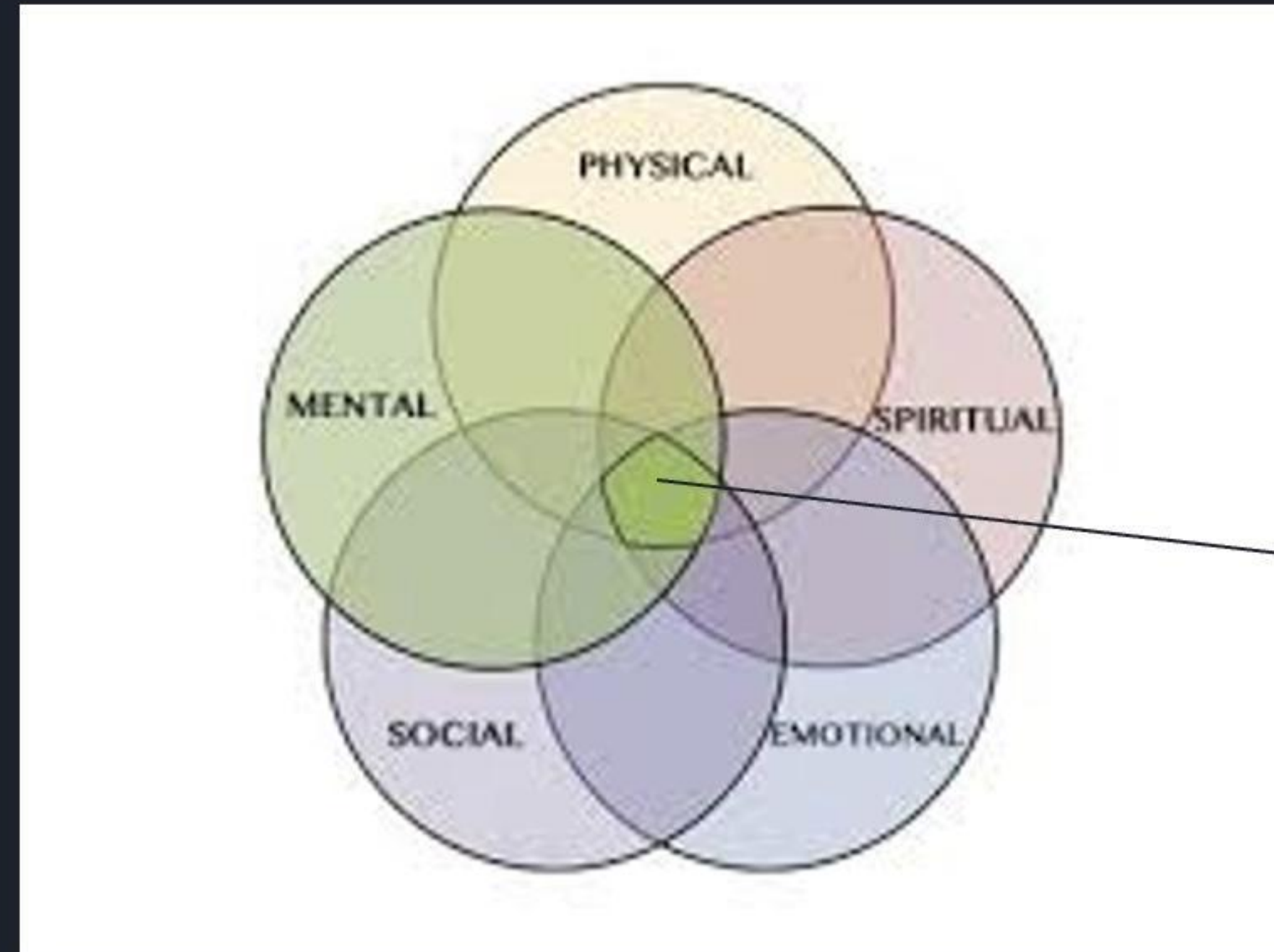
2. Questioning habits

We rely on everyday teacher questioning.

DIMENSIONS OF HEALTH & WELLBEING

There are 5 dimensions of health and wellbeing that characterize an individual to achieve **optimal health and wellbeing**, they are:

- **Physical**
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‘Optimal Health’

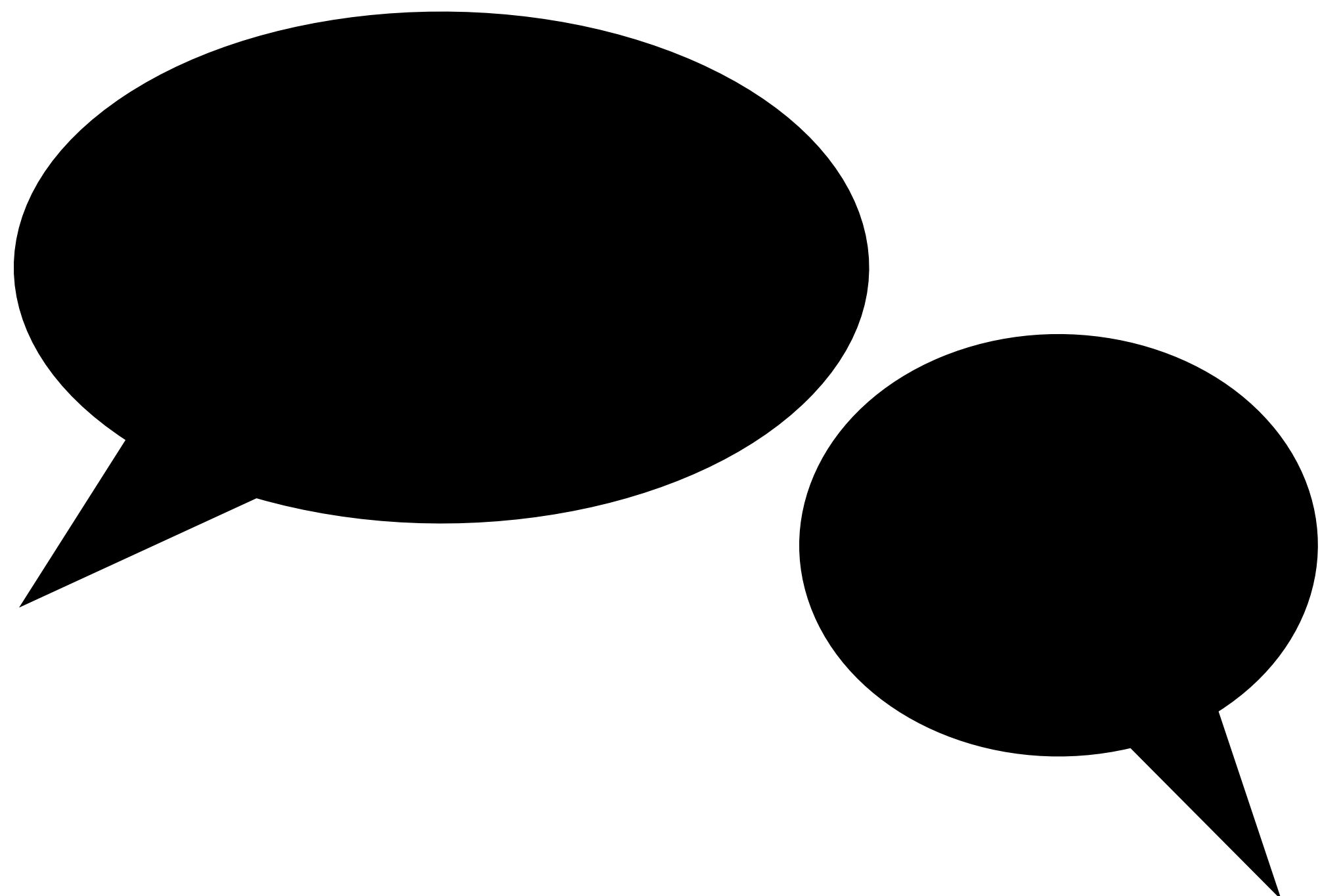
Health and wellbeing is characterised by an equilibrium in which an individual feels happy, healthy, capable and engaged.

"Who knows...?"

"Who can tell me...?"

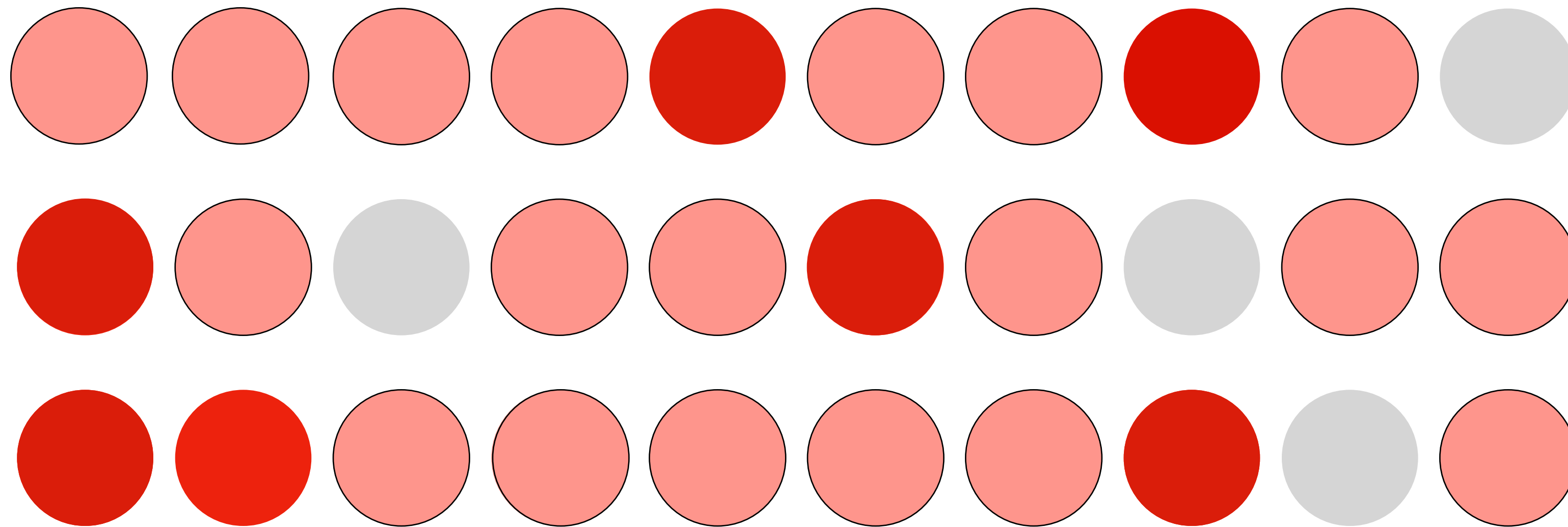
"So who can think of an example of...?"

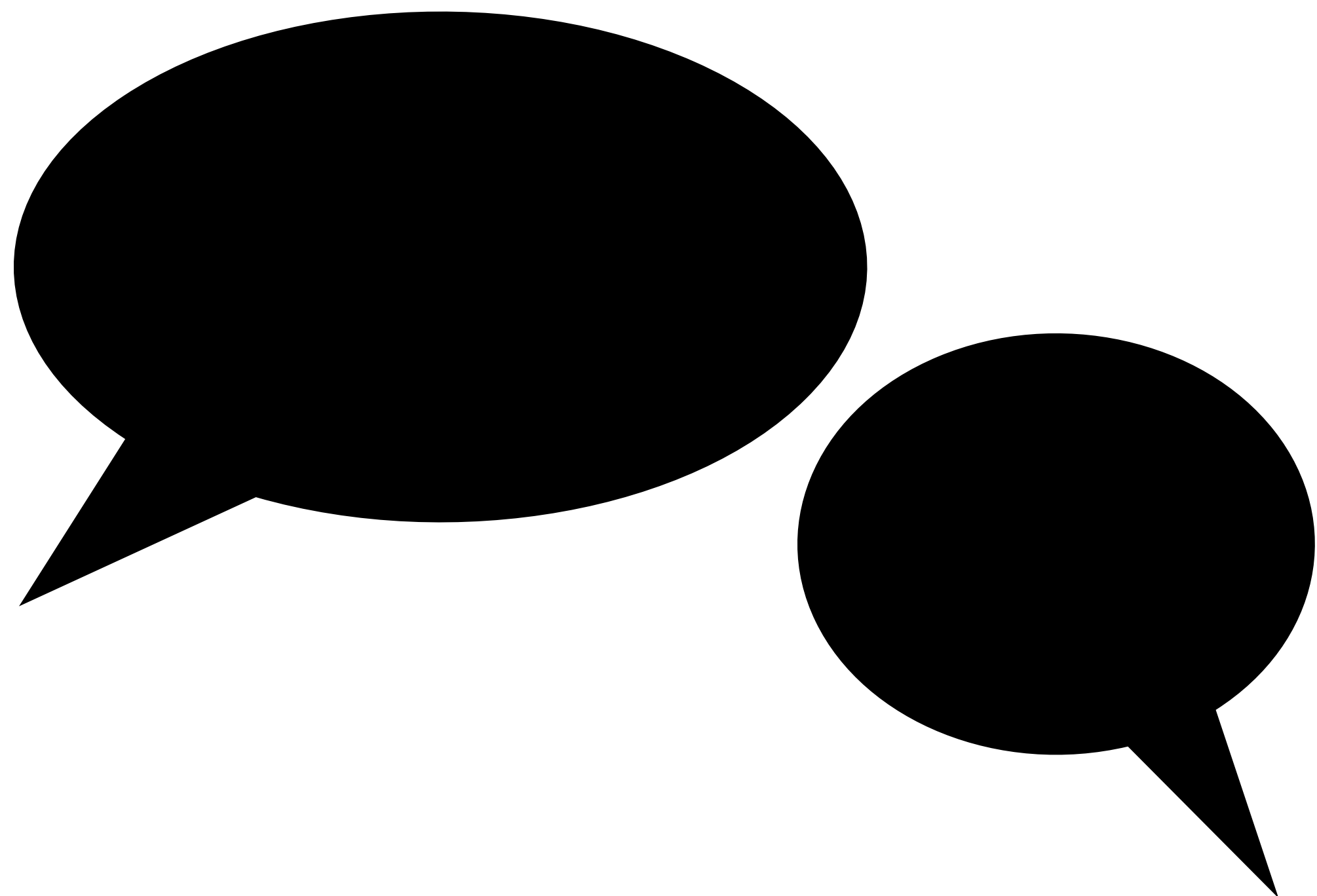
"Who's got an idea about why...?"



What happens?

Patchy participation is a problem.





Why is this a problem?





Write one low-yield question.

1. Planning as curriculum content

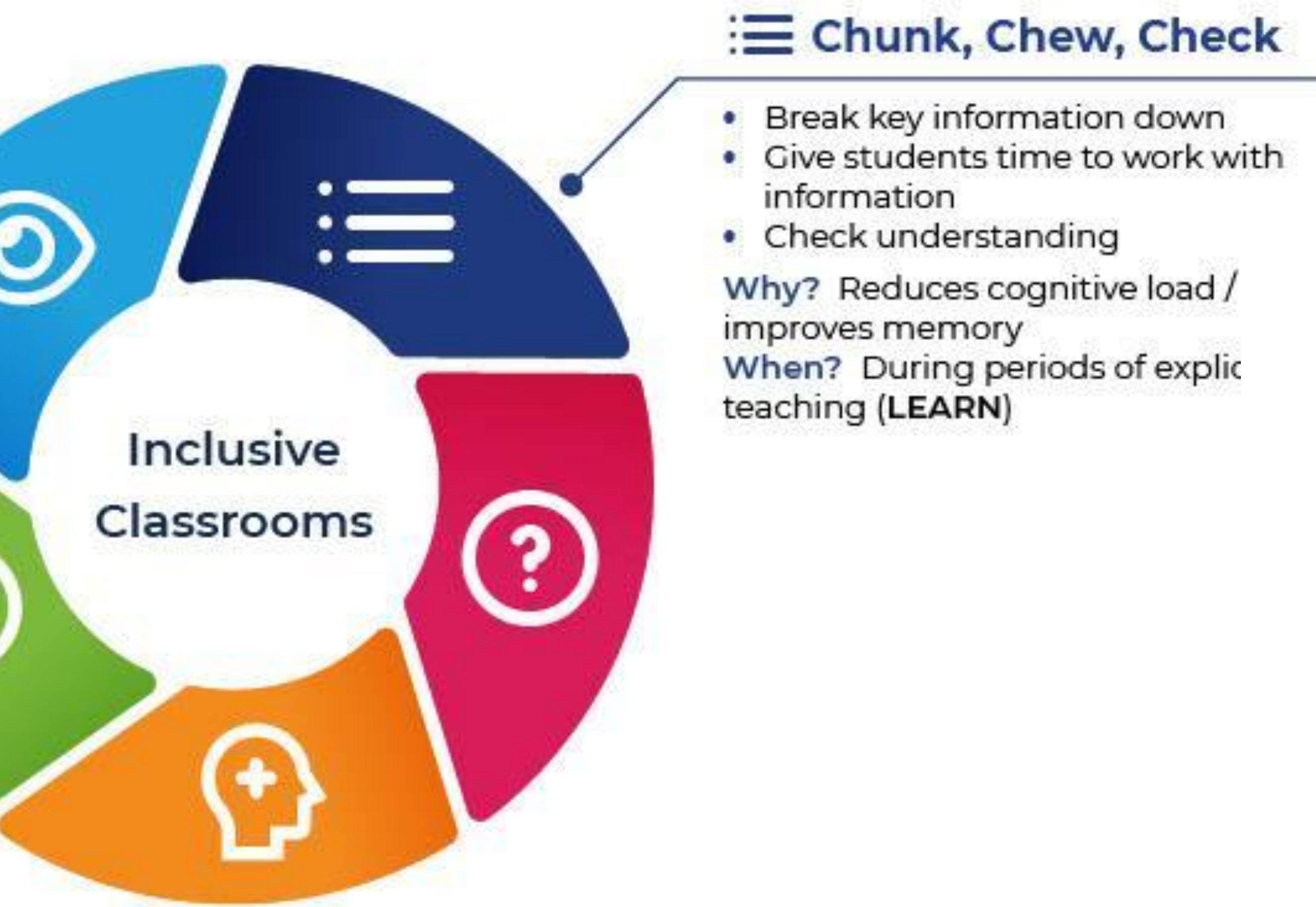
Chunks are planned, but checks for understanding are not.

2. Questioning habits

We rely on everyday teacher questioning.

3. Insufficient models of excellence

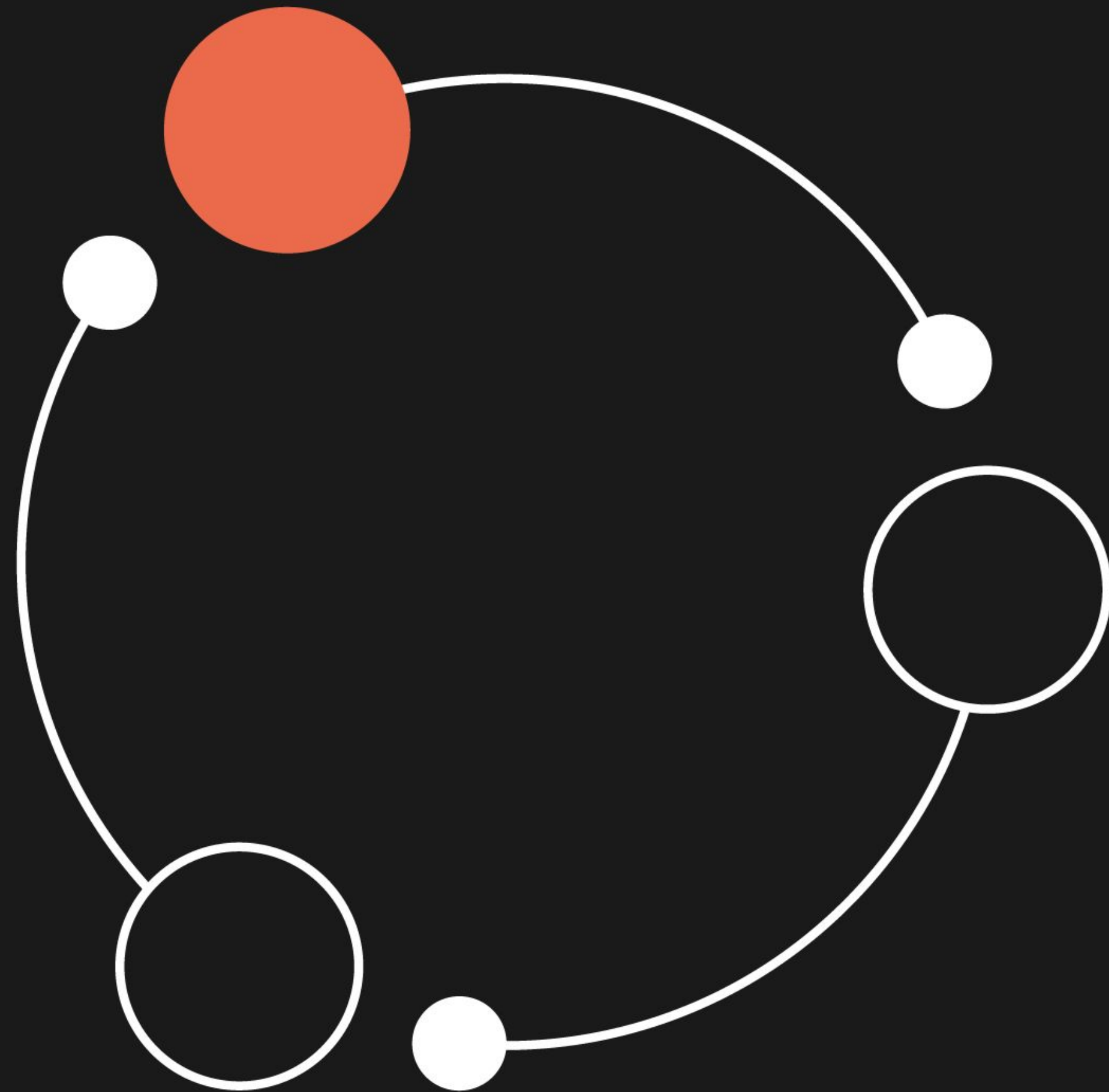
Leaders do not have a strong (enough) conception of what “great” looks like



Teachers were doing this.

But what does “great” look like?

What supports are we providing teachers to do this exceptionally well?



3 emerging
ideas

1. Conceptualise planning as a scaffold for great teaching

How will we know students are acquiring the skills and/or knowledge of the lesson?

1. Conceptualise planning as a scaffold for great teaching

How will we know students are acquiring the skills and/or knowledge of the lesson?

2. Work on shared all-student checks for understanding

Teachers need systems for checking all students' understanding.

1. Conceptualise planning as a scaffold for great teaching

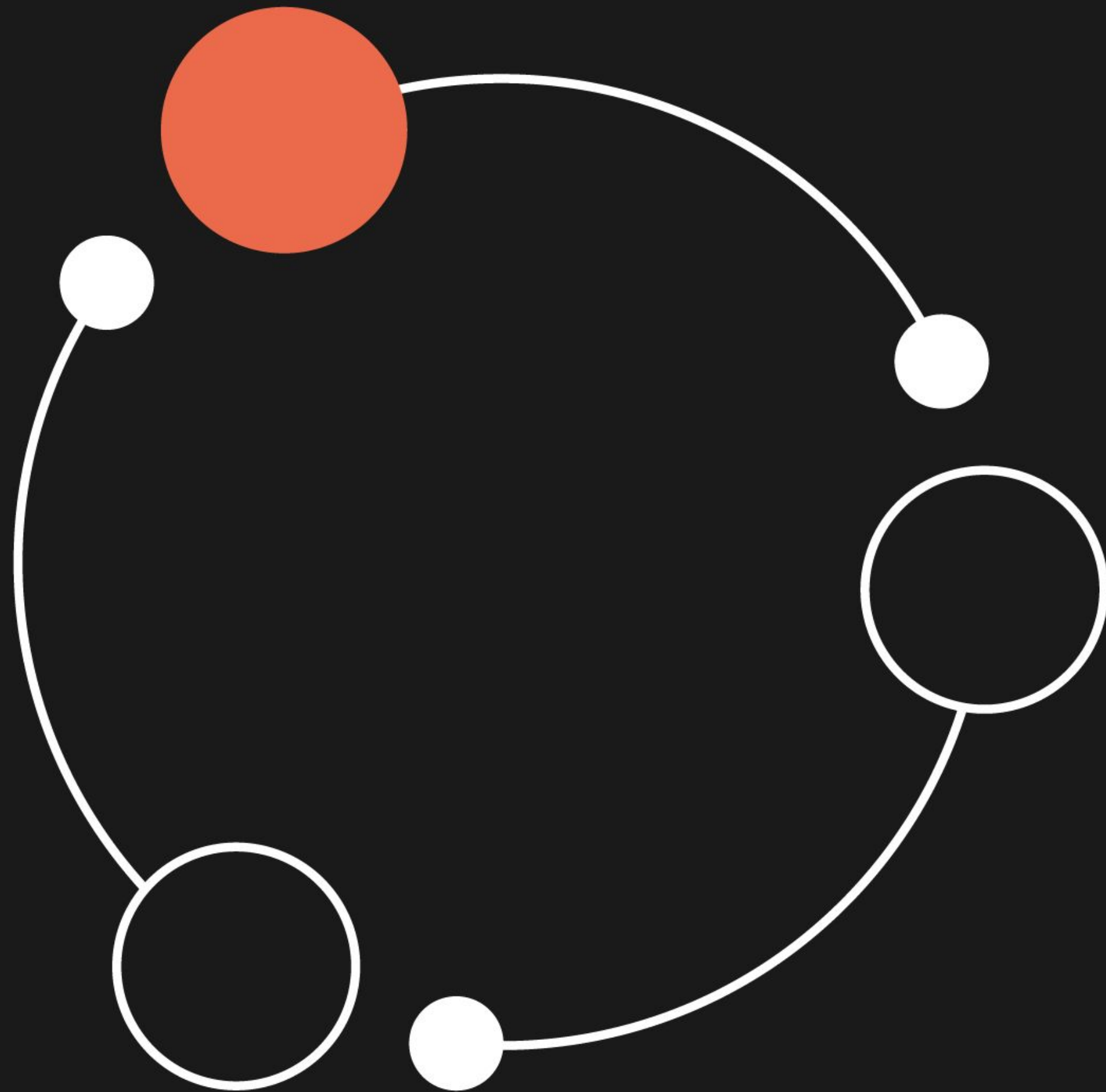
How will we know students are acquiring the skills and/or knowledge of the lesson?

2. Work on shared all-student checks for understanding

Teachers need systems for checking all students' understanding.

3. Build multiple models of excellence

Develop and unpack models (live, static, varied contexts/domains).



*Same lesson,
same teachers.*

The 5 dimensions of health



LEARNING OBJECTIVE

To identify and describe the 5 dimensions of health and wellbeing.

How we participate in Year 7 Health



WHITEBOARDS



COLD CALL



IN YOUR BOOK



TRUE/FALSE



MULTIPLE CHOICE



TURN AND TALK



Read the definition.

What are the 5
dimensions of health?

What is health?

A state of complete physical, social, emotional, mental and spiritual well-being.



Health and wellbeing is characterised by an **equilibrium** in which an individual feels happy, healthy, capable and engaged.

Physical health and wellbeing

Physical health and wellbeing refers to the **functioning of the body and its systems** including the ability to complete day to day tasks.

Examples include:

- Healthy body weight
- Adequate fitness
- Strong immunity
- Good energy levels
- Lack of disease or illness





True or false?

Teach the response routine.

Exercise is an aspect of our physical health.

If we get poor sleep, it won't have an impact on our physical health.

If we are physically well and eat a healthy diet, we will have good health and wellbeing.



True or false?

Teach the response routine.



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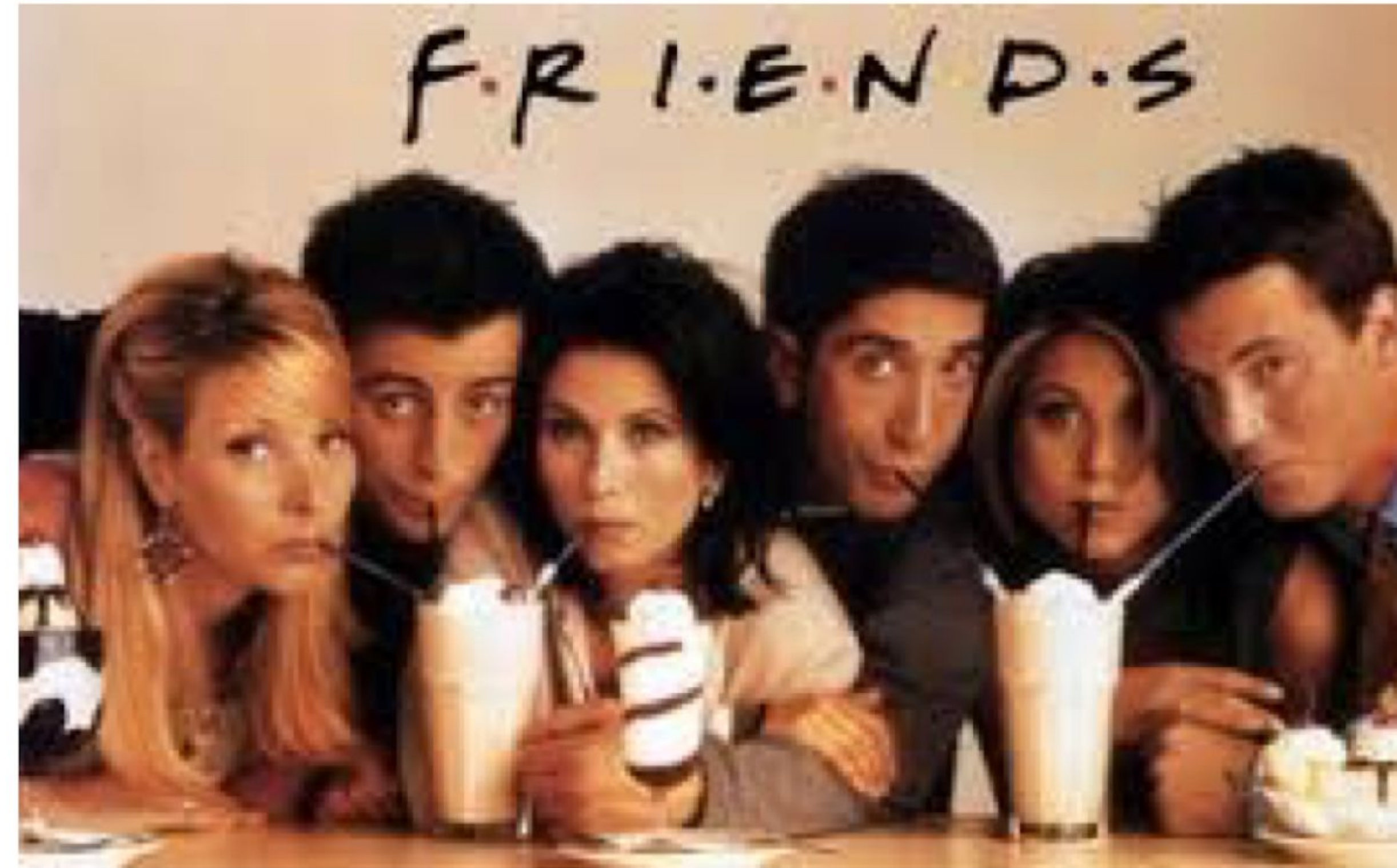
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-  Exercise is an aspect of our physical health.
-  If we get poor sleep, it won't have an impact on our physical health.
-  If we are physically well and eat a healthy diet, we will have good health and wellbeing.

Social health and wellbeing

Social health and wellbeing refers to the ability to form and **maintain meaningful relationships** with others and ability to manage and **adapt to social situations**.





Students discuss meaningful relationships using the sentence frames. (2 mins)

1. One person who I have maintained a meaningful relationship with is...
2. _____ has been helpful for my social health because he/she has _____.

Examples include:

- Supportive and **protective** social network of friends
- Supportive and well-functioning family
- Ability to manage or adapt appropriately to different social situations
- Effective communication with others





True or false?

Teach the response routine.

Having friends who care about you is important for your health and wellbeing.

Being part of a sports team could improve both your physical and social health.



True or false?

Teach the response routine.





Having friends who care about you is important for your health and wellbeing.

Being part of a sports team could improve both your physical and social health.



True or false?

Teach the response routine.

-  Having friends who care about you is important for your health and wellbeing.
-  Being part of a sports team could improve both your physical and social health.

Emotional health and wellbeing

Emotional health and wellbeing refers to the ability to **express feelings** in a positive way.

Having a high level of **resilience** (ability to “bounce back”)

Express, adapt and manage emotions





Describe a time when you showed resilience.



We show **resilience** when we “bounce back” from a set back in life.



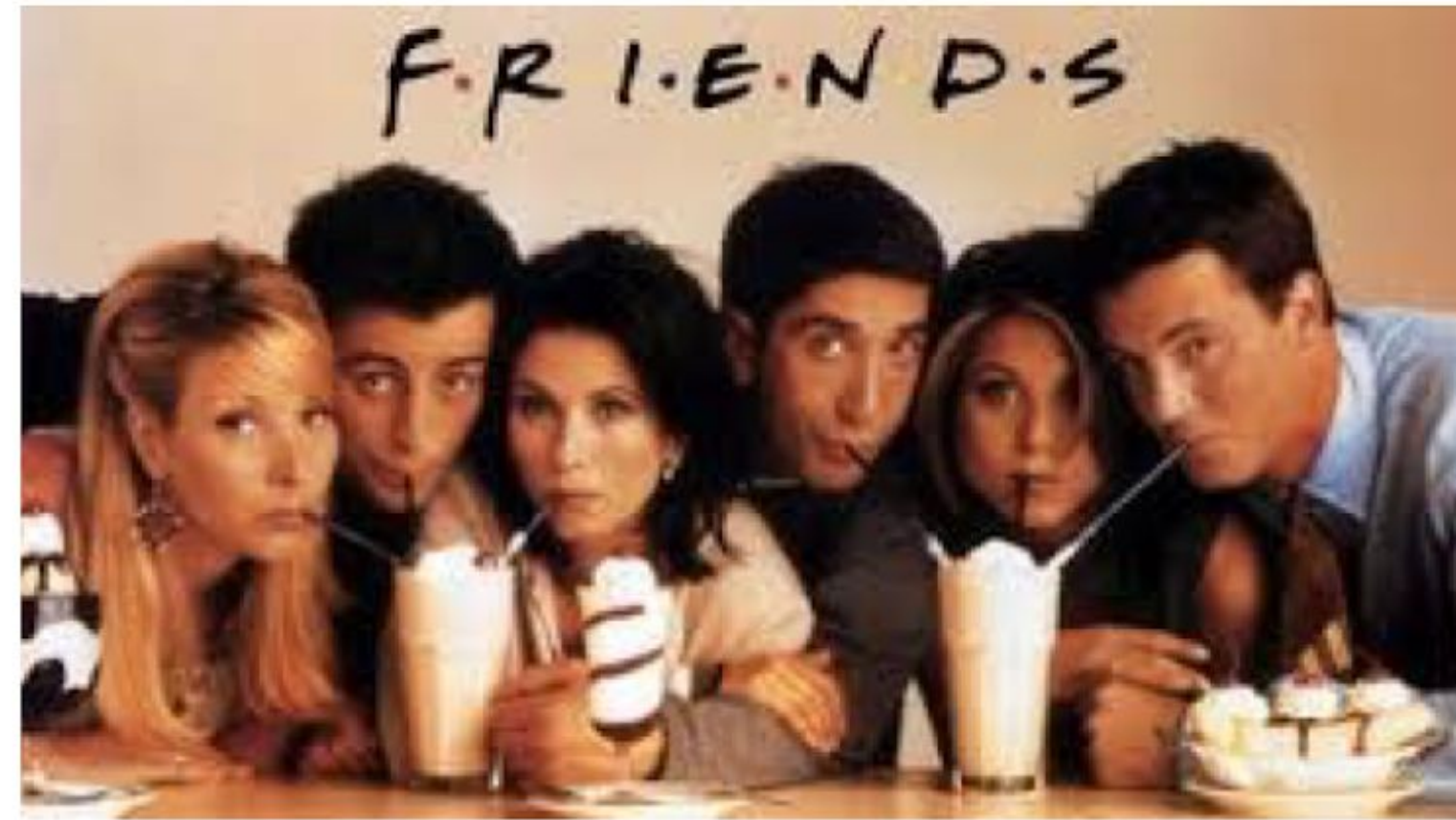
Summarise each dimension with your partner.

Write them down.

So far we have learned about 3 different dimensions of health and wellbeing.



Ph_____ health



S_____ health



E_____ health

Mental health and wellbeing

Mental health and wellbeing is the current state of the mind or brain. It also relates to the ability to **think and process information**.

Examples of good mental health include:

Low levels of stress and anxiety

Positive **self-esteem**

High confidence

Positive thought patterns (optimistic)



True or false?

Teach the response routine.

If you have good mental health,
you could say you are in
“equilibrium”.

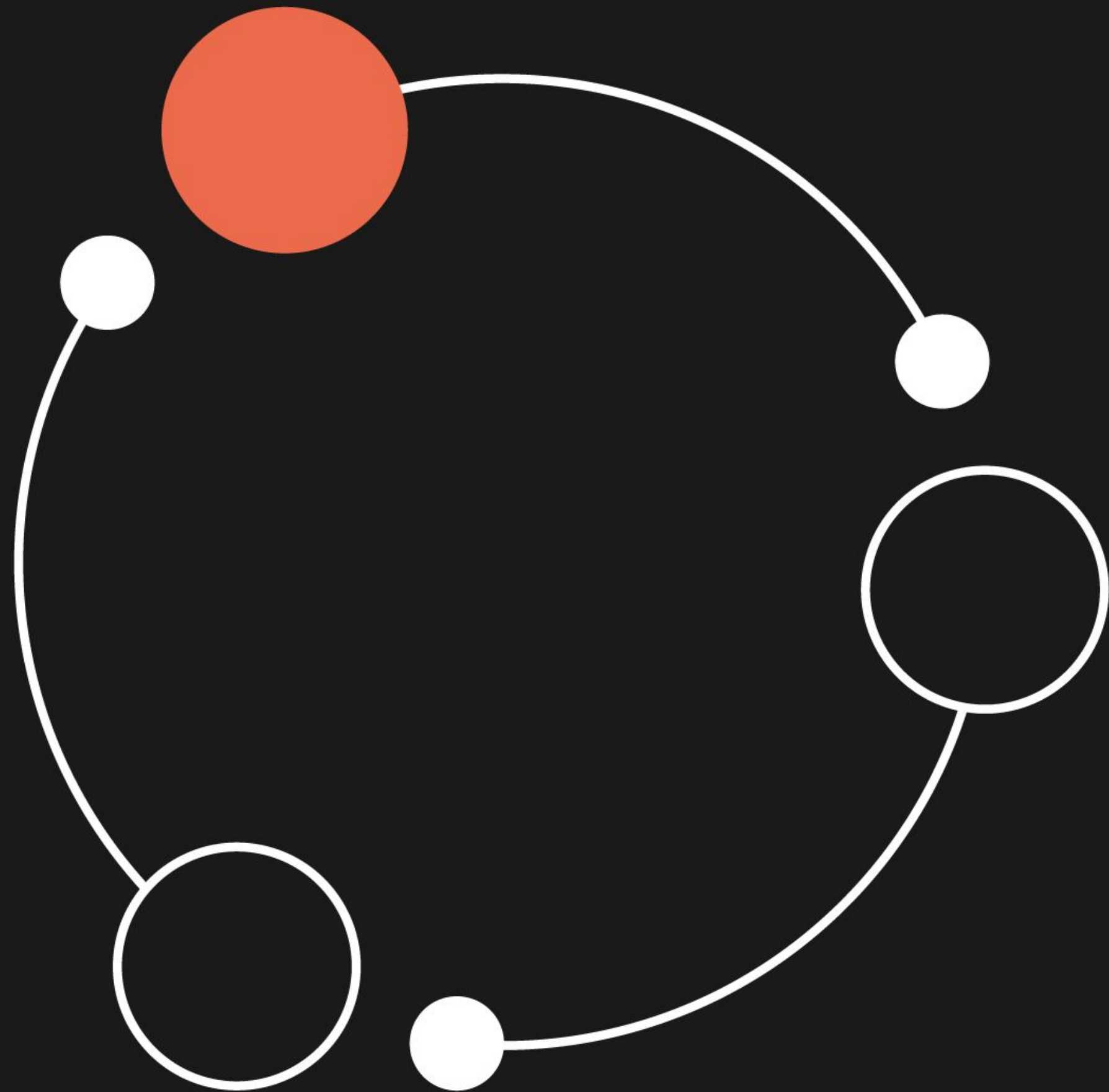
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If you have good mental health,
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“equilibrium”.





Conceptualise planning as a scaffold for great teaching.

Work on shared all-student checks for understanding.

Develop strong models of excellence.



Thank you!

contact@bronwynryriejones.com

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