

Planning for Thinking and Cognitive Development of Students

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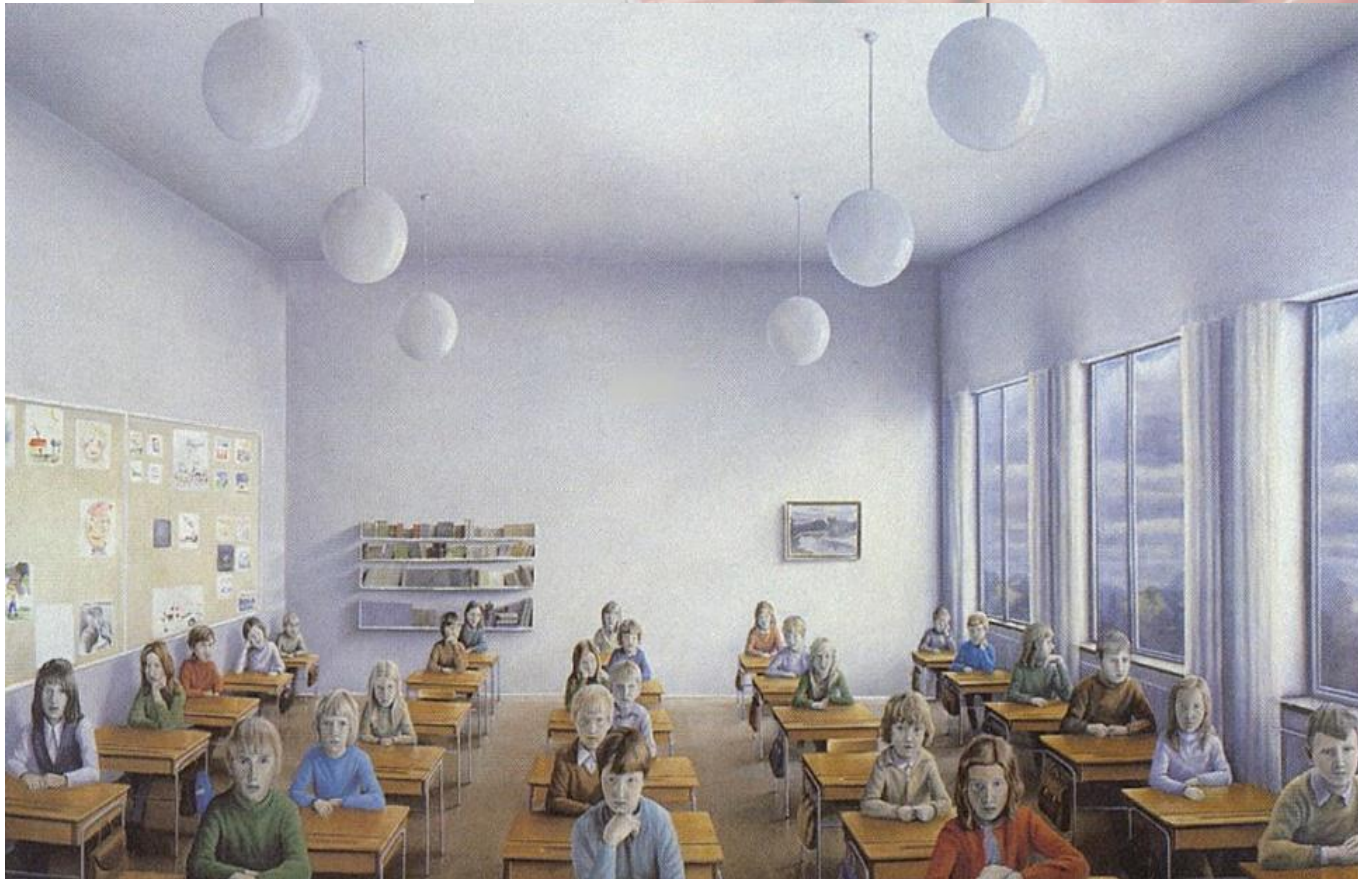
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If you entered this classroom, what would you say to the teacher?

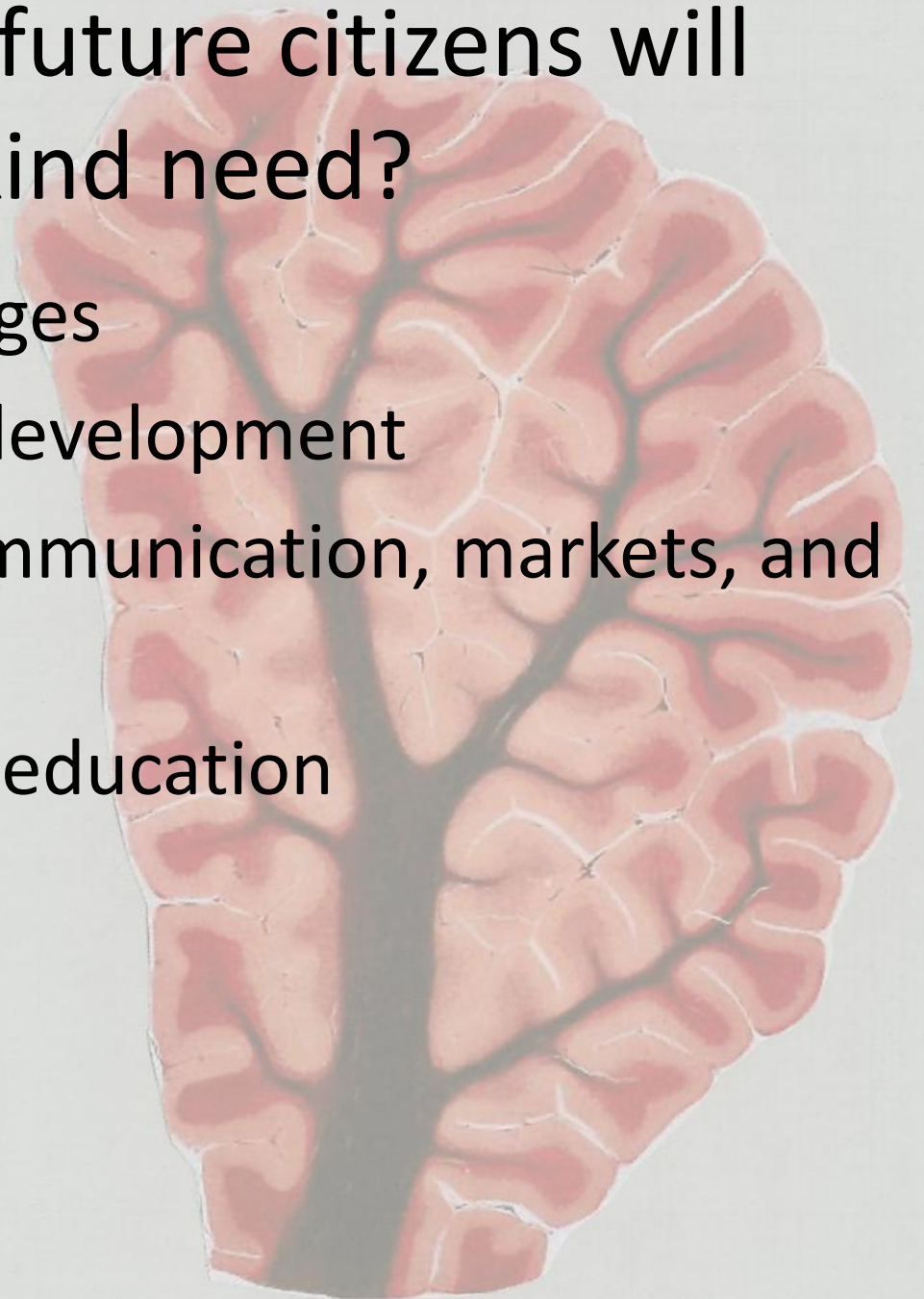
You are now the teacher in this class. It is your first day at work. What would you do?



Swedish artist Peter Tillberg 'Will you make value, my dear?'

What kind of future citizens will mankind need?

- Rapid societal changes
- Fast technological development
- Globalization of communication, markets, and ideas
- Demands for equal education



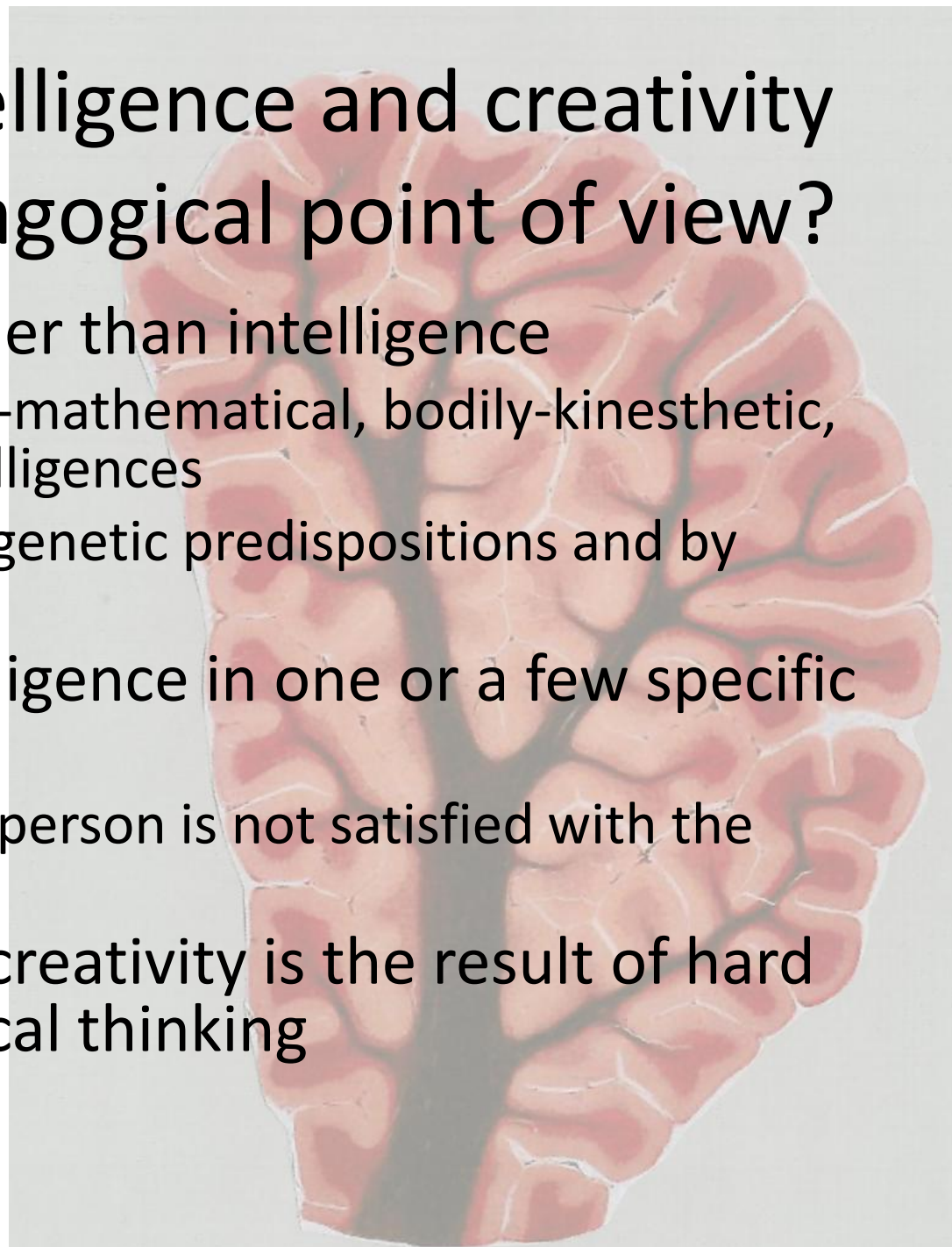
The future world citizen will have to be able to...

- Adapt to new environments and conditions
- Navigate in massive amounts of information
- Make productive and intelligent choices
- Be creative
- Think critically



What is intelligence and creativity from a pedagogical point of view?

- Intelligences rather than intelligence
 - linguistic, logical-mathematical, bodily-kinesthetic, musical etc. intelligences
 - formed both by genetic predispositions and by context
- Creativity is intelligence in one or a few specific areas
 - But the creative person is not satisfied with the present state
- Intelligence and creativity is the result of hard work and of critical thinking



What is a good school for fostering thinkers?



The teacher is vital to successful education

- Takes responsibility in class for the
 - subject content
 - the activities
 - the results
 - the social relations



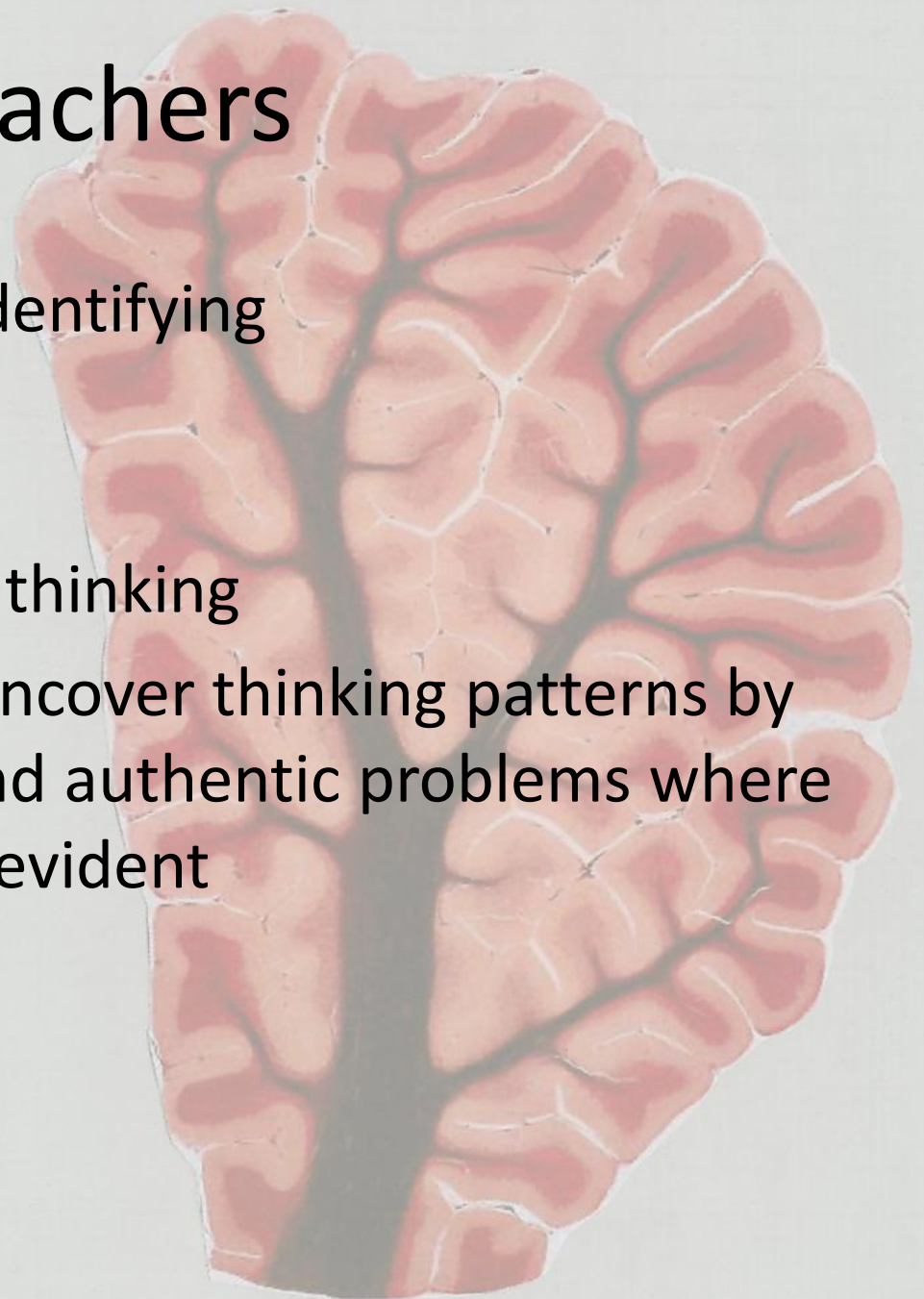
Students should experience...

- Time to explore a variety of angles
- To be gradually taken from every-day experience to generalized knowledge by challenging cognitive work by
 - Analysis
 - Meta-cognition
 - Formative assessment
- Open dialogue on how thinking is done
 - Using thinking routines
 - Contextual mediation
- Goal focused interaction



Teachers

- Start the planning in identifying
 - central areas
 - desired results
- Focus their actions on thinking
- Help the students to uncover thinking patterns by presenting complex and authentic problems where the answer is not self-evident



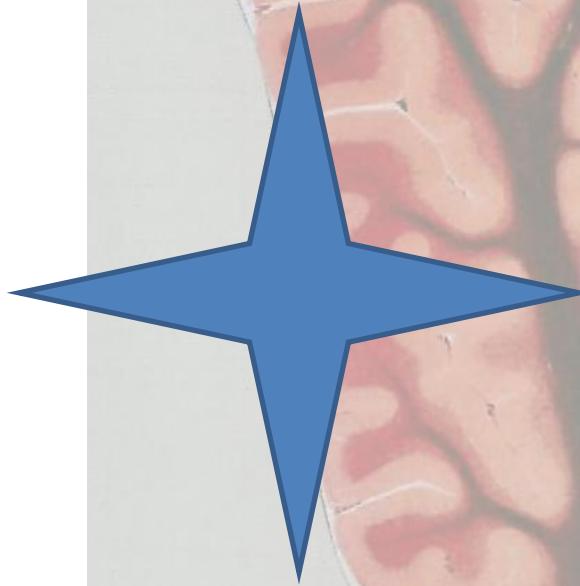
Need to know

Worrisome

Excited

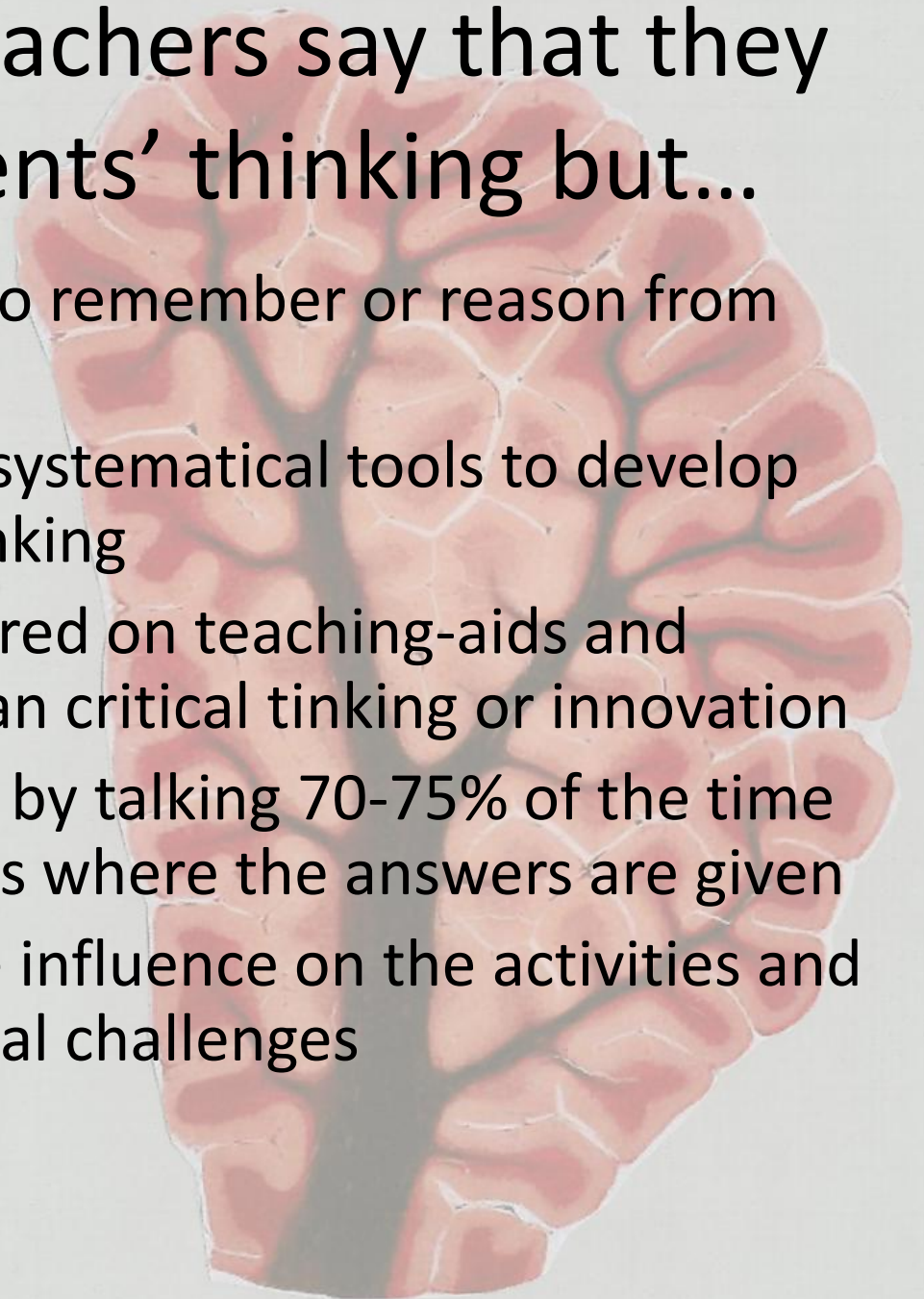
Stance –

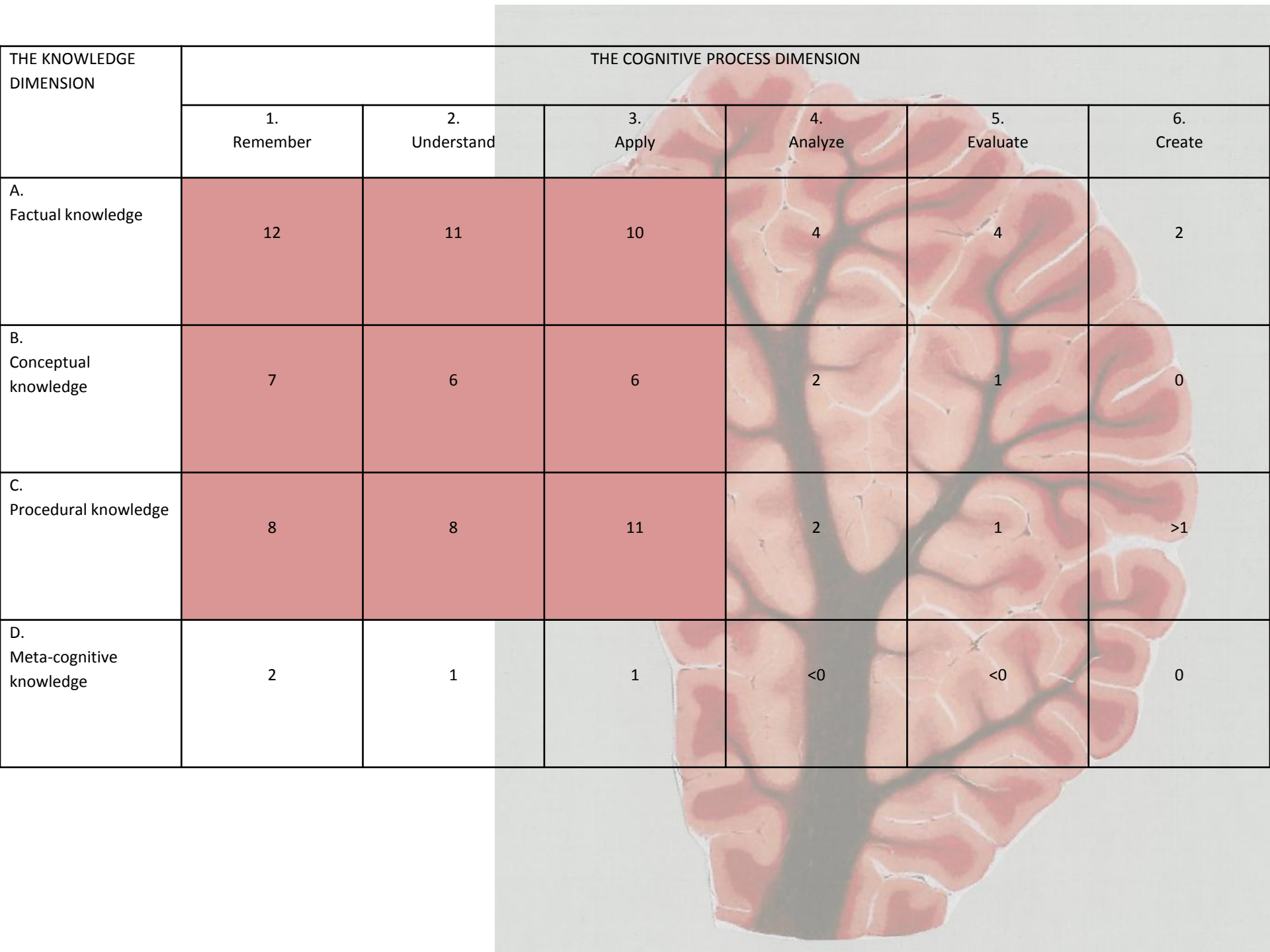
This is what I think
about this



When asked, teachers say that they develop students' thinking but...

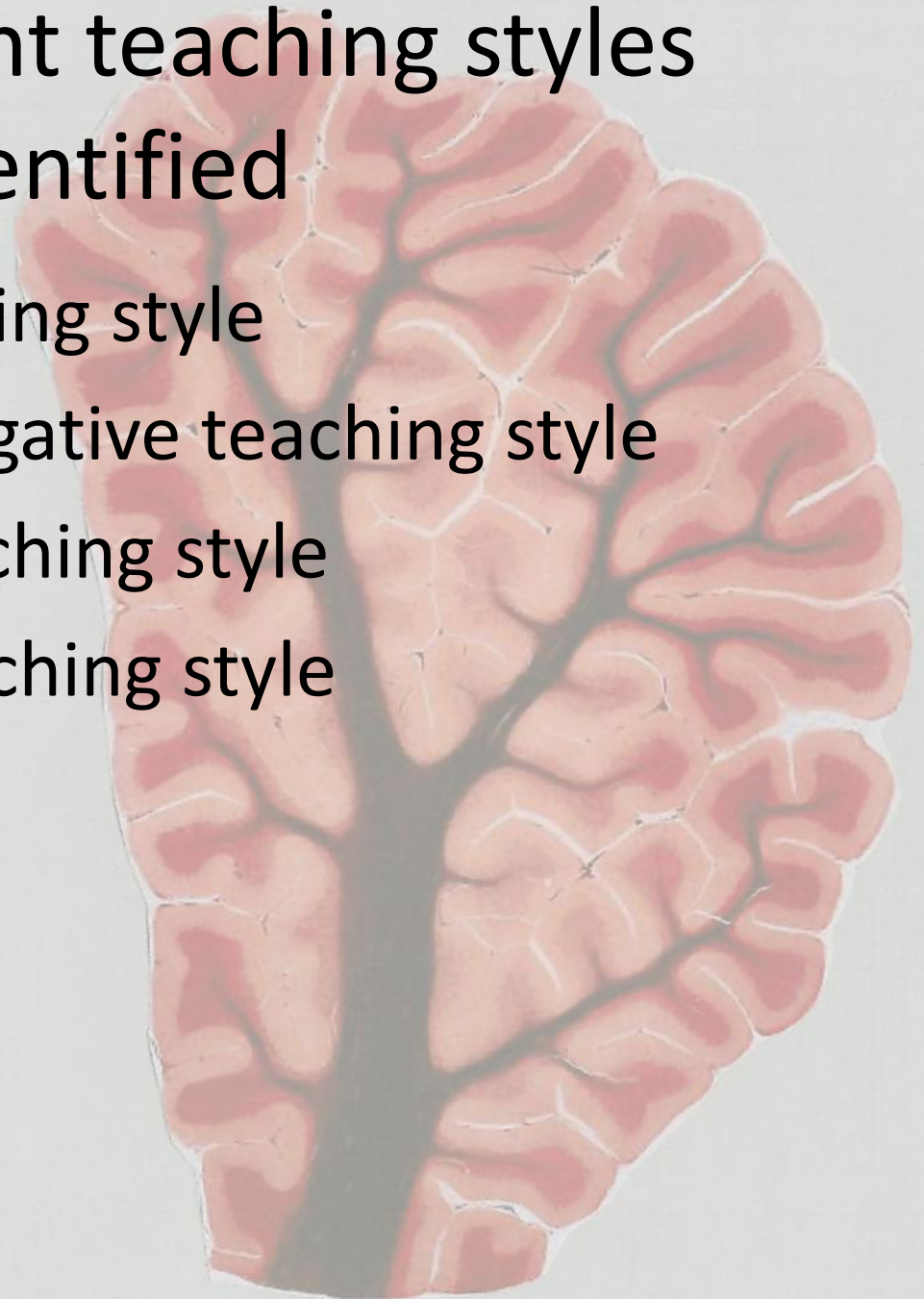
- Teachers ask students to remember or reason from previous experiences
- Few challenges and or systematical tools to develop analytic or creative thinking
- The activities are centered on teaching-aids and reproduction rather than critical tinkering or innovation
- The teacher dominates by talking 70-75% of the time and by posing questions where the answers are given
- The students have little influence on the activities and tend to avoid intellectual challenges





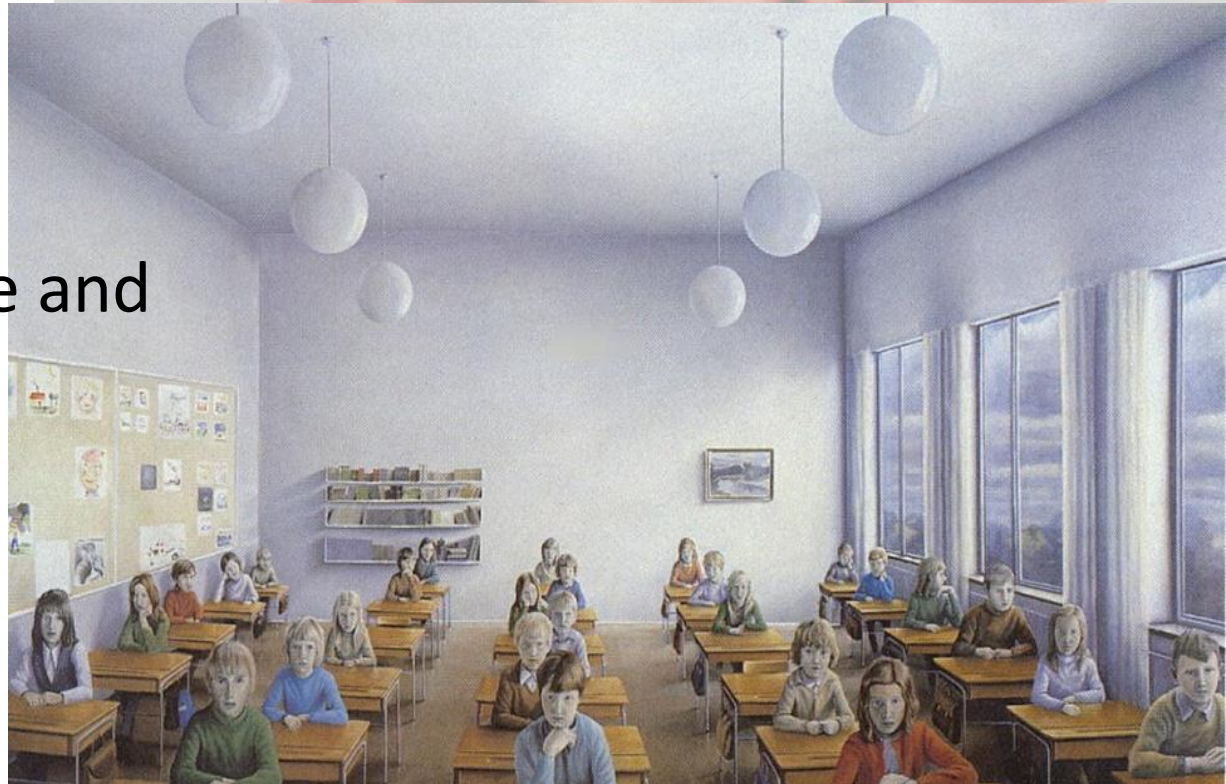
Four different teaching styles identified

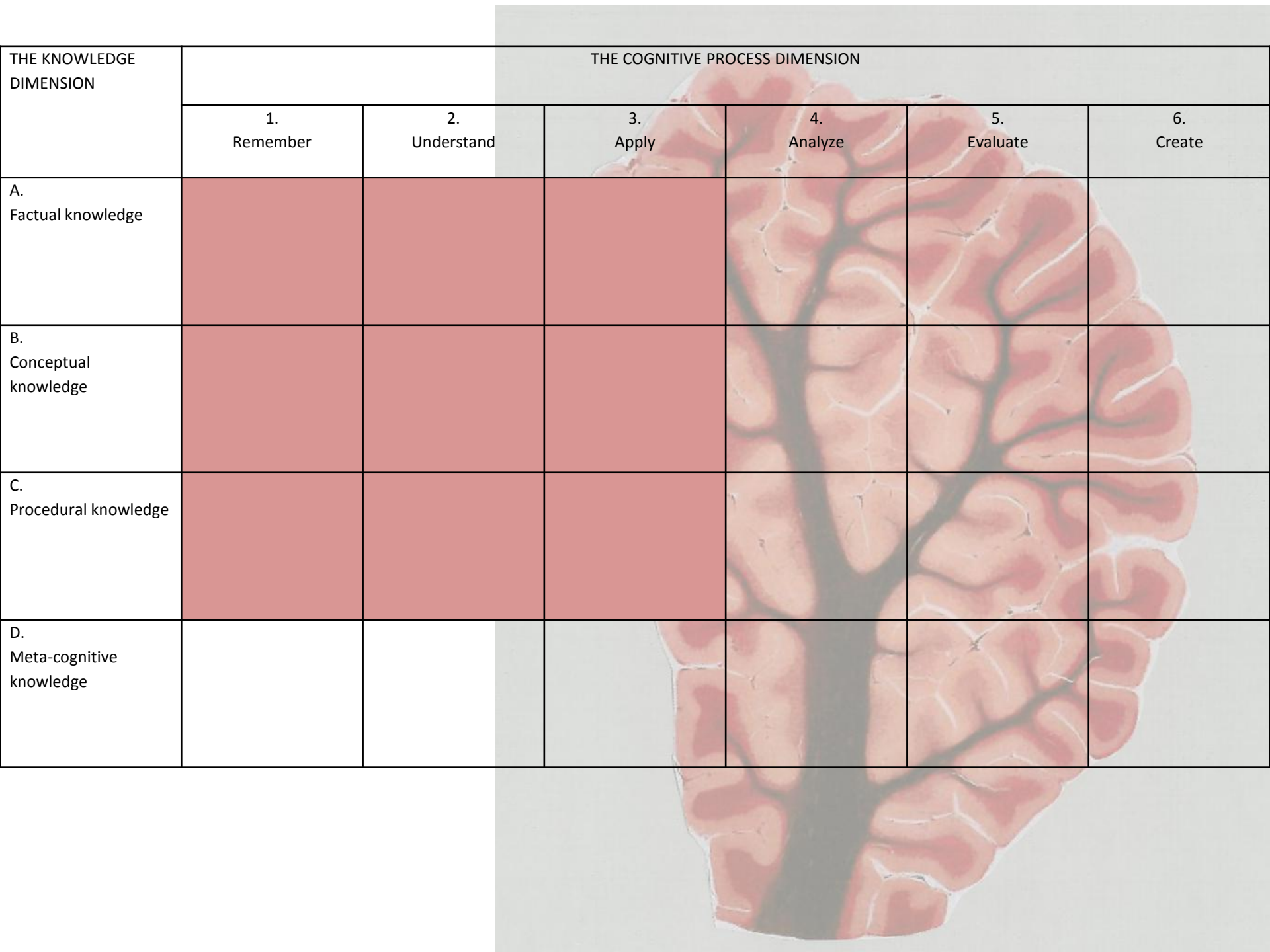
- The common teaching style
- The student investigative teaching style
- The scaffolding teaching style
- The 'moralistic' teaching style



The common teaching style

- Start with the teacher introducing
- The teacher presents new knowledge
- Class practice and teacher corrects
- Teacher summarize and give homework

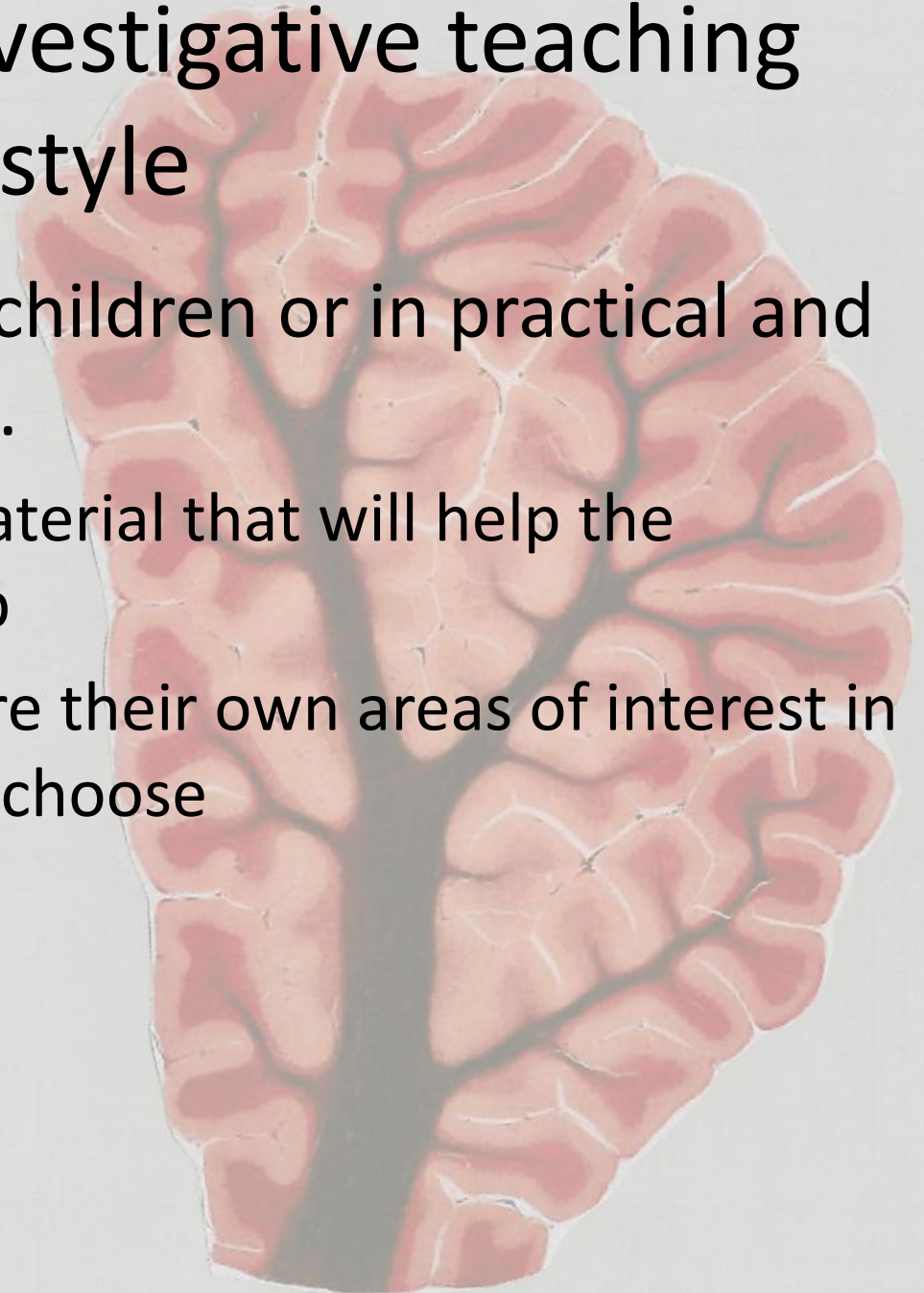


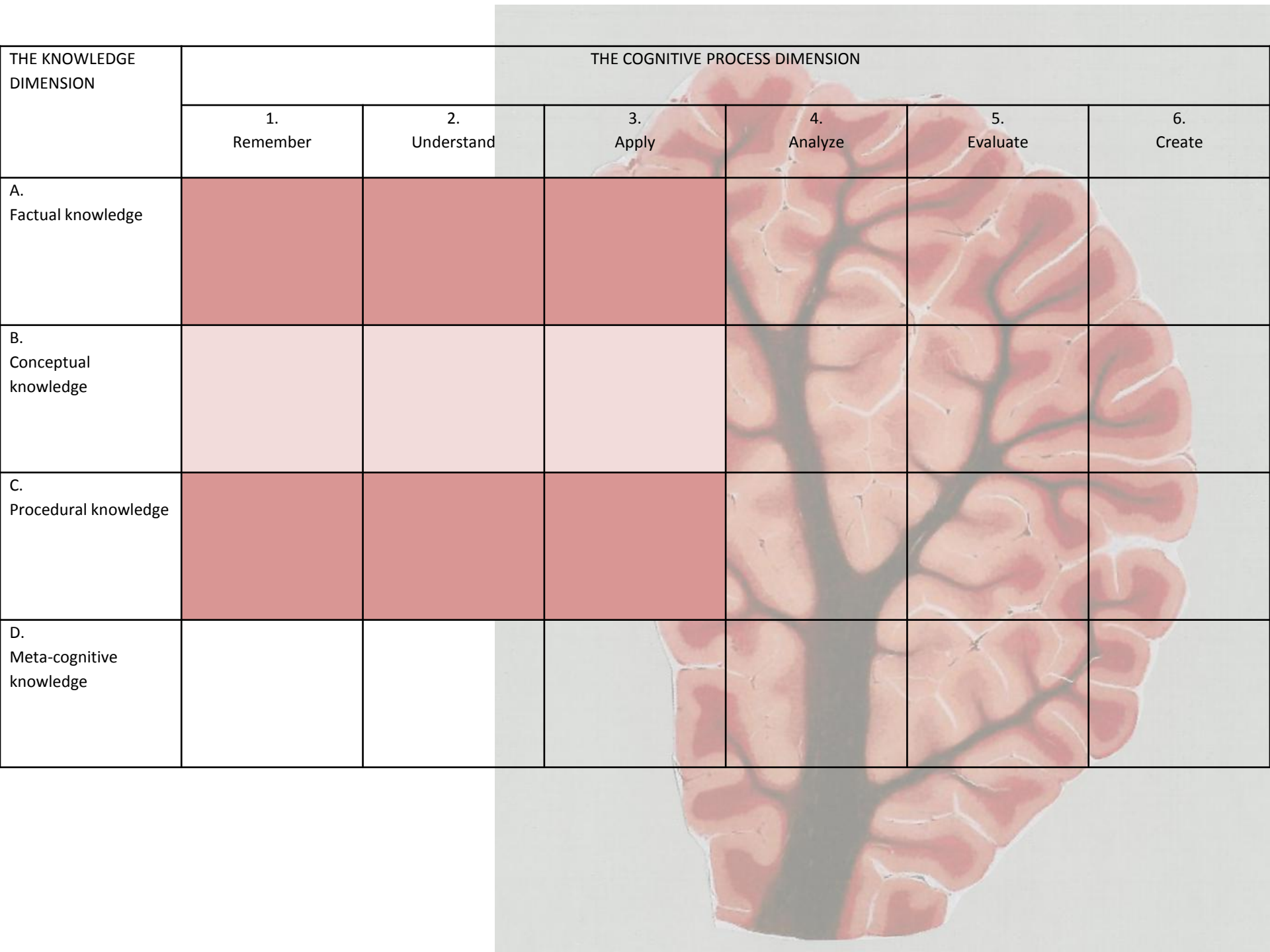


THE KNOWLEDGE DIMENSION	THE COGNITIVE PROCESS DIMENSION					
	1. Remember	2. Understand	3. Apply	4. Analyze	5. Evaluate	6. Create
A. Factual knowledge						
B. Conceptual knowledge						
C. Procedural knowledge						
D. Meta-cognitive knowledge						

The student investigative teaching style

- Mostly with young children or in practical and aesthetical classes...
 - Introducing new material that will help the students to develop
 - The students explore their own areas of interest in whatever way they choose

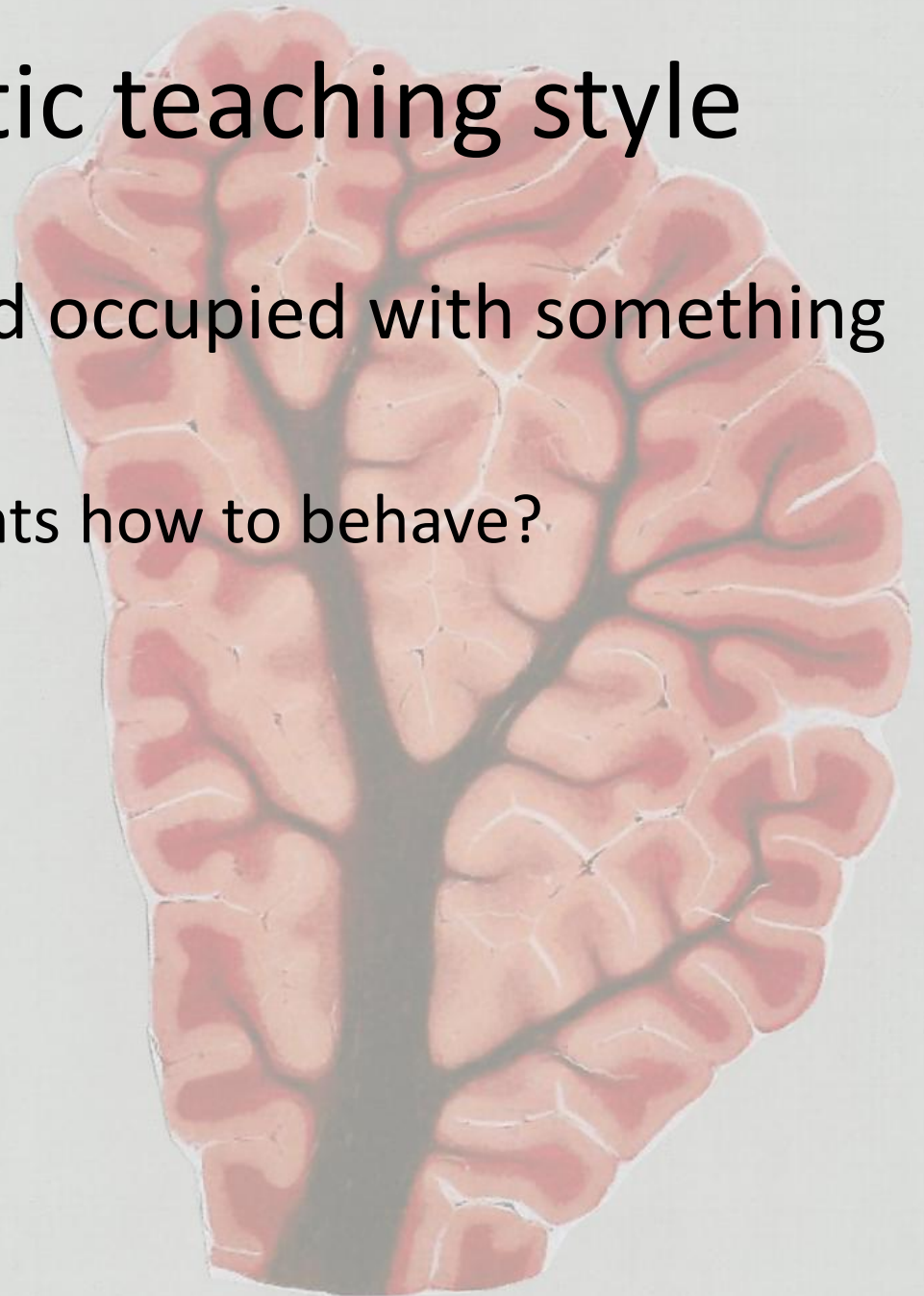


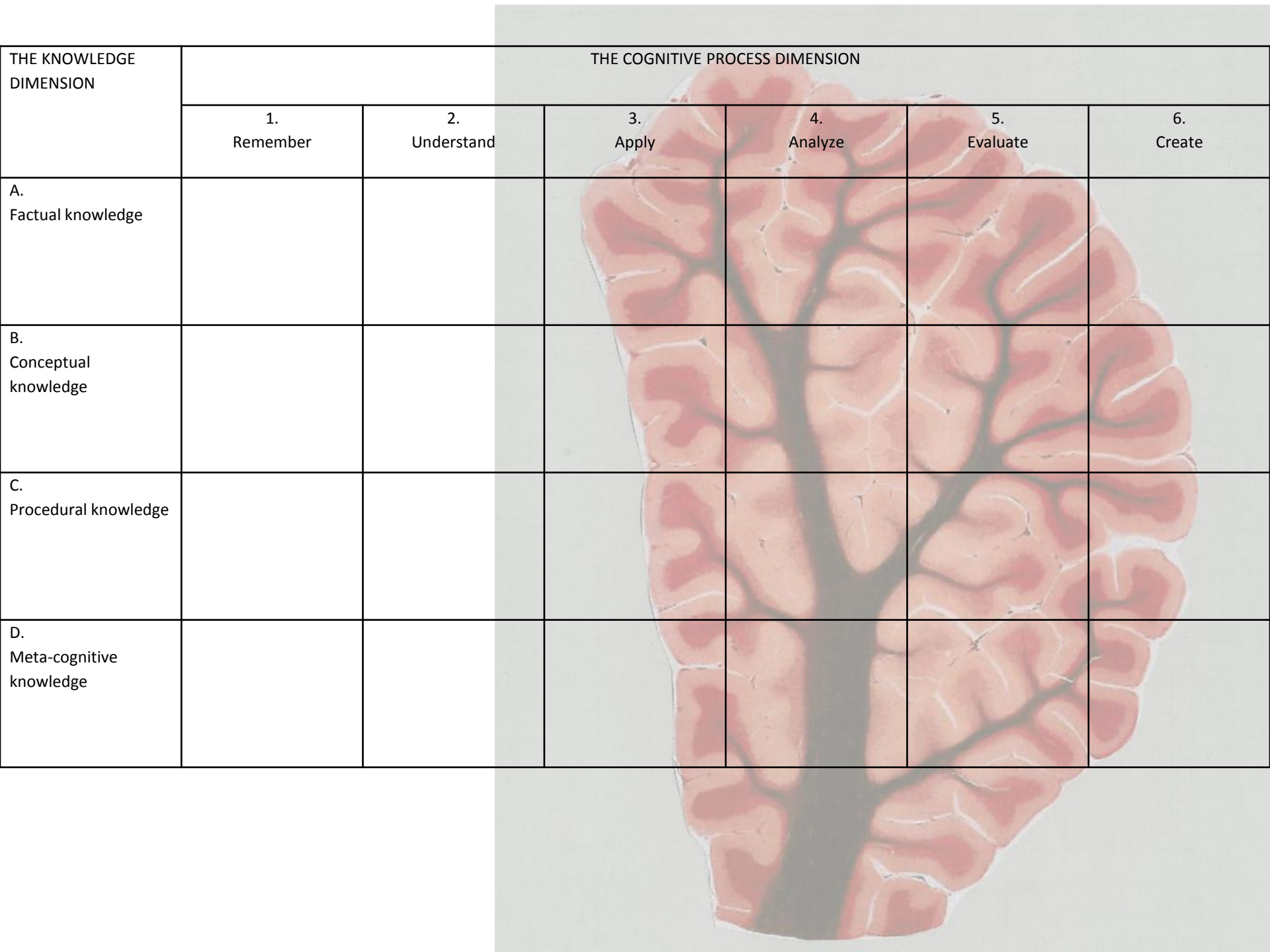


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The moralistic teaching style

- The teacher seemed occupied with something else
 - teaching the students how to behave?





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The scaffolding teaching style

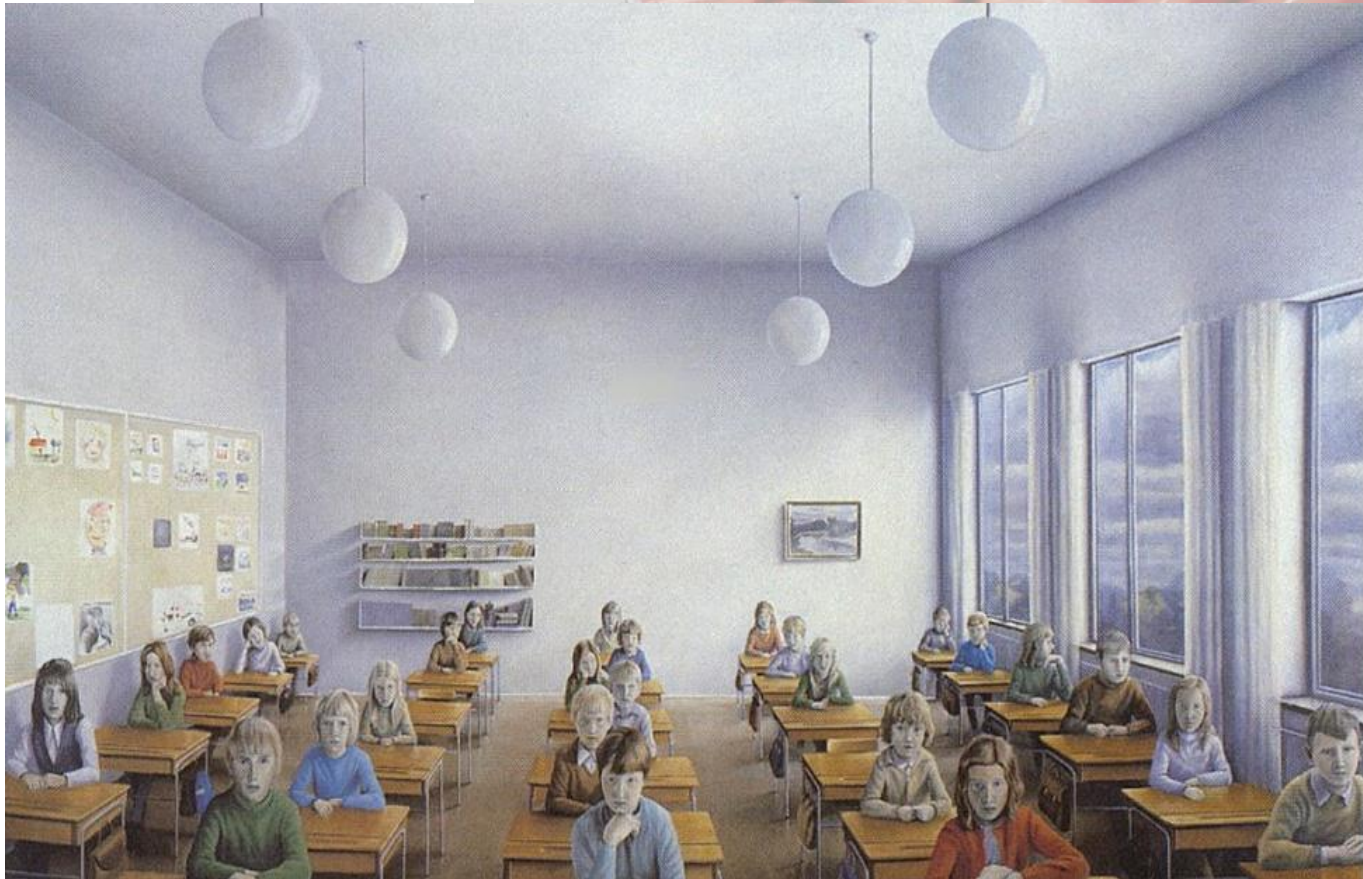
1. Puzzlement, perplexity and challenge by
 - a) Philosophizing
 - b) Experiment
2. Analysis:
 - a) What did we find out? What did we learn?
 - b) What do we want to learn/understand now?
 - c) Thinking tools and strategies
3. New knowledge
 - a) Lectures, films etc.
 - b) Museums and facilities in society
 - c) Search in books, on internet
4. Generalization and transfer
 - a) Thoughtful dialogue
 - b) 'Create the opposite'
5. Evaluate the work
 - a) What did we learn?
 - b) How did we learn?





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How would we educate the teacher?



What will the teacher have to know?

- Planning for students' cognition rather than for teaching facts, requires
 - Other methods and structures than the traditional ones
 - Other ways of questioning
 - Another planning structure
- Use the environment to send productive messages to students
- Act as a role model



I used to think this...

Now I think this...



Indeed, the “smarter”
the environment and
the more powerful the
interventions and the
available resources, the
more proficient people
will become, and the
less important will be
their particular genetic
inheritance.

Howard Gardner

