# Organizing Learning materials with Graphs and Illustrations

## Part 1 Bloom's Taxonomy

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# Organisation of Learning Materials

- Why is this skill important?
  - too much information to digest at any one time
  - the organization process compels you to go through the learning materials in greater depth
  - enhance your understanding and memory

# Intended Learning Outcomes

- At the end of this workshop, you can:

1. **Describe** the different methods to organize learning materials.
2. **Select** the most appropriate method to organize the learning materials of a particular topic to enhance your learning.

# Structure of the Workshop

- Two parts:

1. Part 1 – Bloom's taxonomy (LV)
2. Part 2 – Methods for organisation of learning materials (HY)

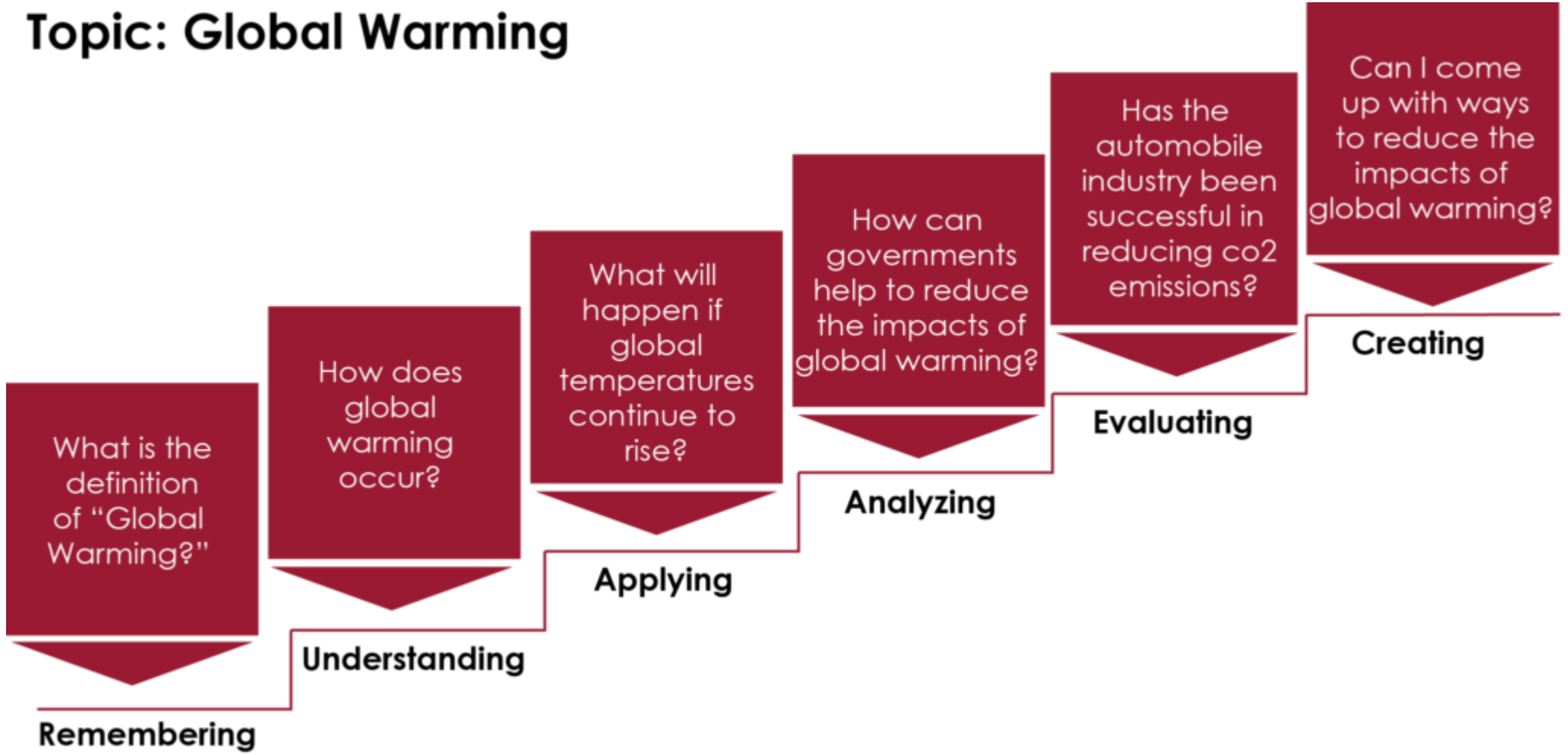
# Bloom's Taxonomy

- Suggested by American Educationalist Benjamin Bloom in 1950s
- Framework to describe different levels of cognitive skills using **verbs**
- 6-level learning "staircase" from low to higher order
- Applied to the verbs using in our CILOs and PILOs of our curriculum , e.g.

  ***Describe*** *the different methods to organize learning materials.*


Source: Anderson, L.W., & Krathwohl, D.R. (Eds.) (2001). A taxonomy of learning, teaching, and assessment: A revision of Bloom's taxonomy of educational objectives. New York: Longman.

# Bloom's Taxonomy – an example




Source: https://oli.cmu.edu/jcourse/workbook/activity/page?context=19fe486f0a0001dc7f27b23f2106048e

# How does Bloom's Taxonomy help with your learning?

- From surface learning to deep learning
- Can be applied to development of:
  - analytical skills
  - problem solving skills
- Important for higher level studies and at work
- Compare with *SOLO taxonomy*


Source: Anderson, L.W., & Krathwohl, D.R. (Eds.) (2001). A taxonomy of learning, teaching, and assessment: A revision of Bloom's taxonomy of educational objectives. New York: Longman.

# Organizing Learning materials with Graphs and Illustrations

## Part 2 Methods and Techniques

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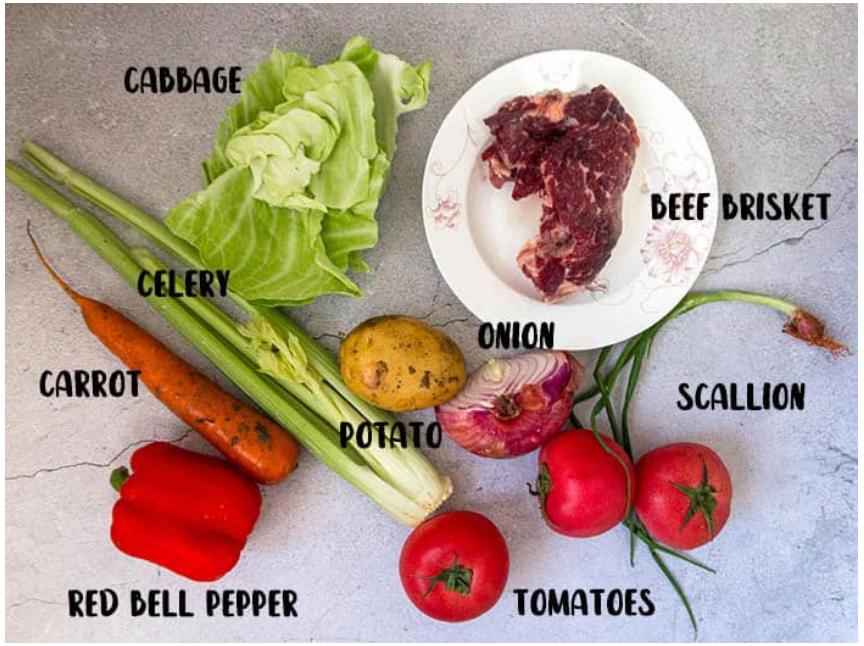
Student Learning Support System

# Why organizing with visualizations?

- TLDR
- Break information into different parts → rebuild the information with parts from a different approach
- Easy connection with other related concepts
- Easy application during revision, exams and assignments

# The Soup metaphor

Imagine you are making a pot of soup. You need to handle the ingredients and cook properly before it turns into a pot of tasty soup

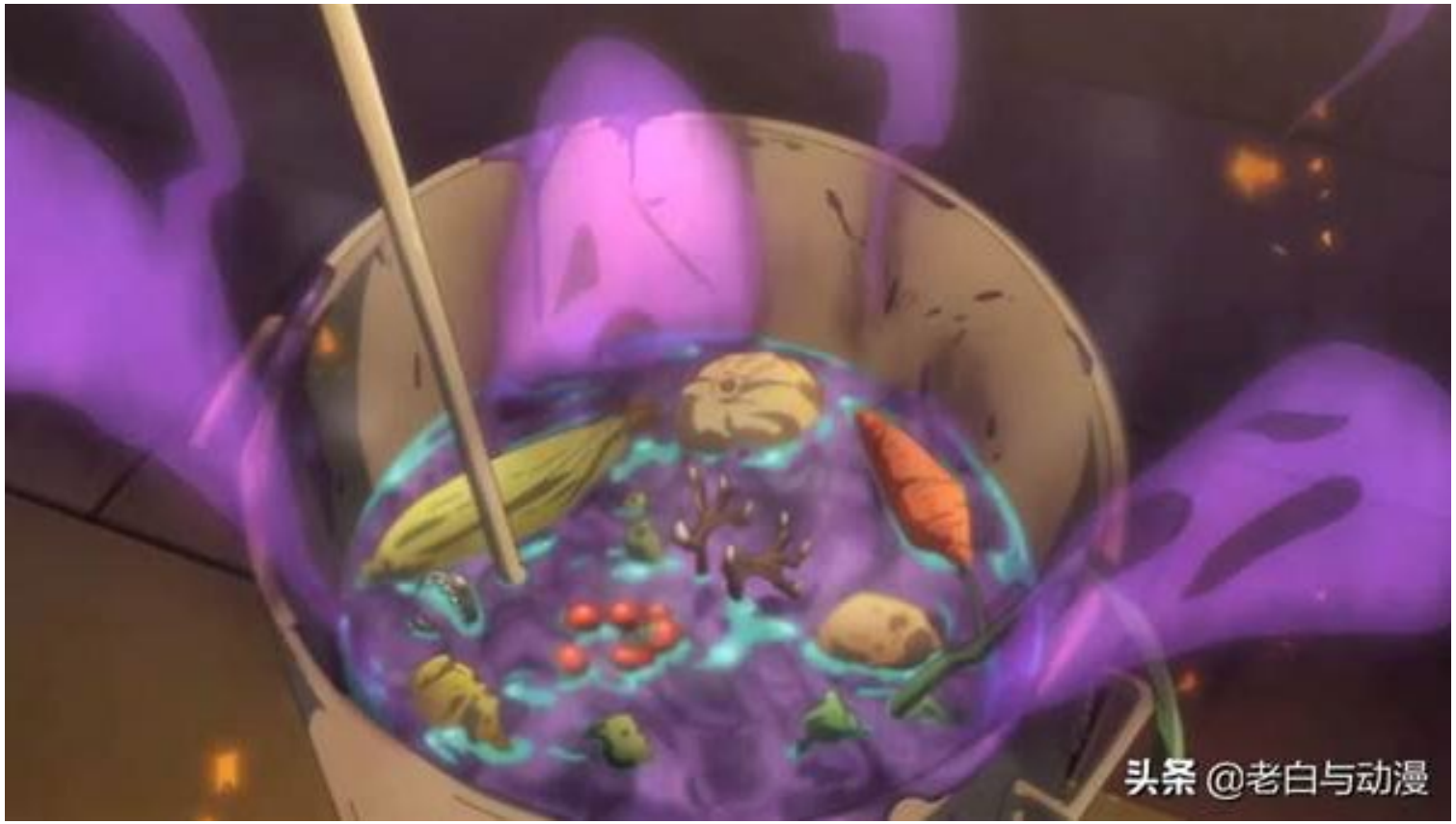



Chopping

Mixing

Seasoning

# The Soup metaphor




This is what you will get if you are not handling it properly.

# How does organization help?

You can easily remember some of the items listed below:

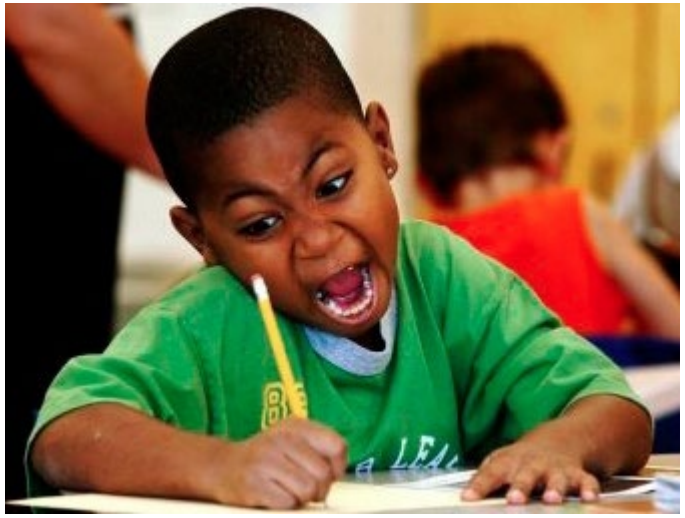
- The characters in your favourite movie/fiction series
- The menu of the restaurant you always visit
- Lyrics of your favourite songs

*But…*

*Why?*

# How does organization help?

- Memories are not printings, they are actions
- Organizing with visualizing tools is practicing with both your hands and your brain



# Before we start organizing…

## Decide your organizer

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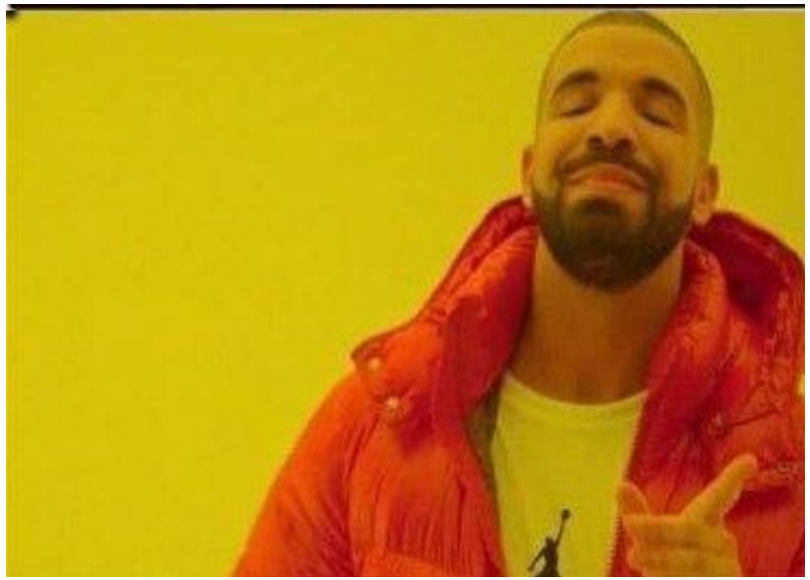
## Decide your organizer

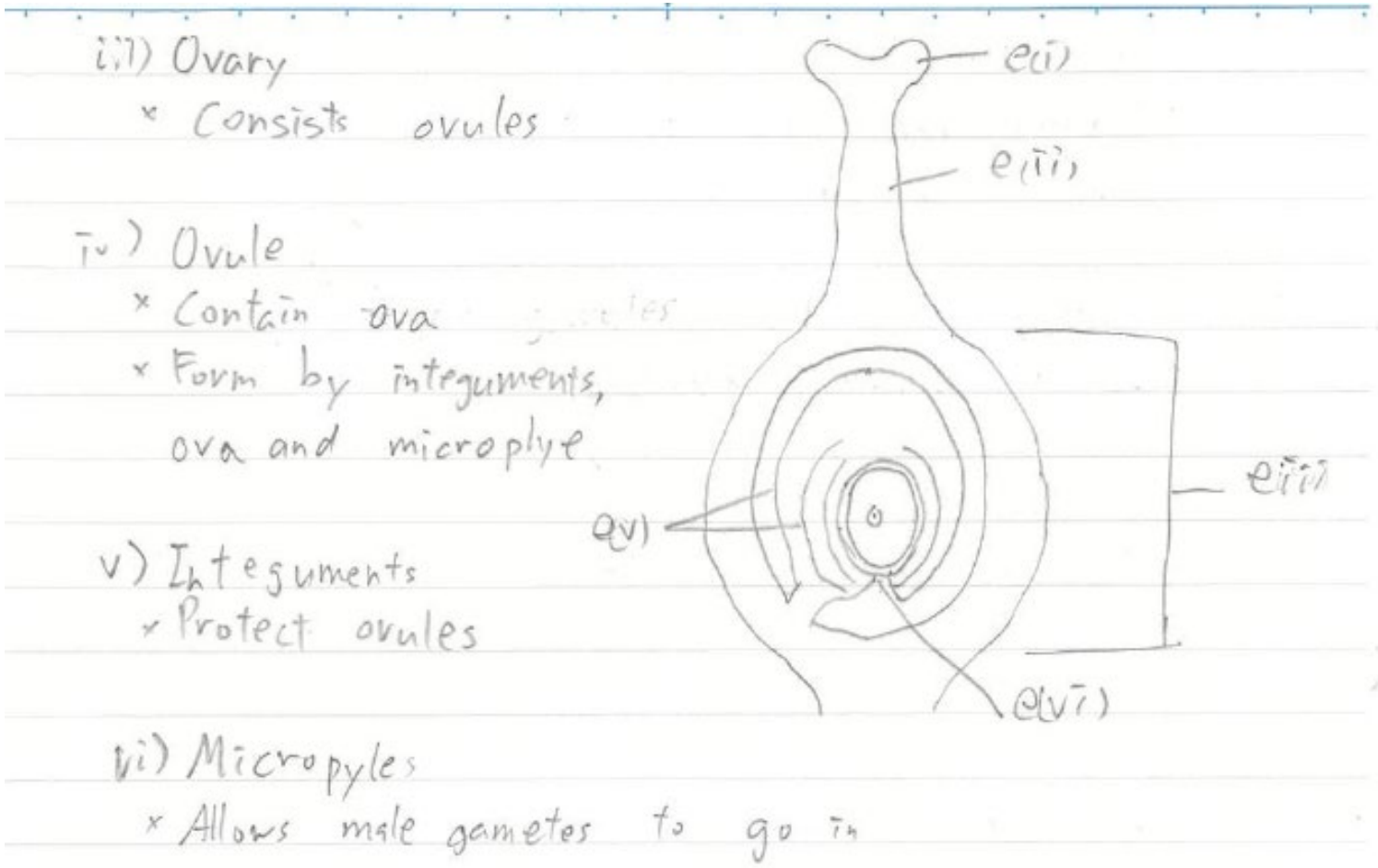


# Illustrations

- Simple
- Draw what you see

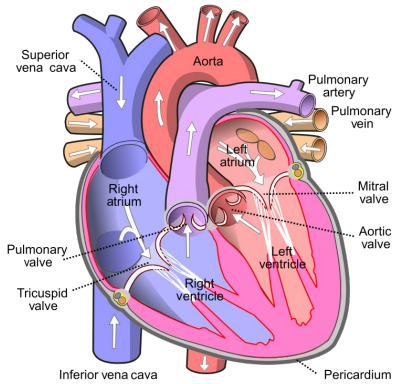
  *Or*

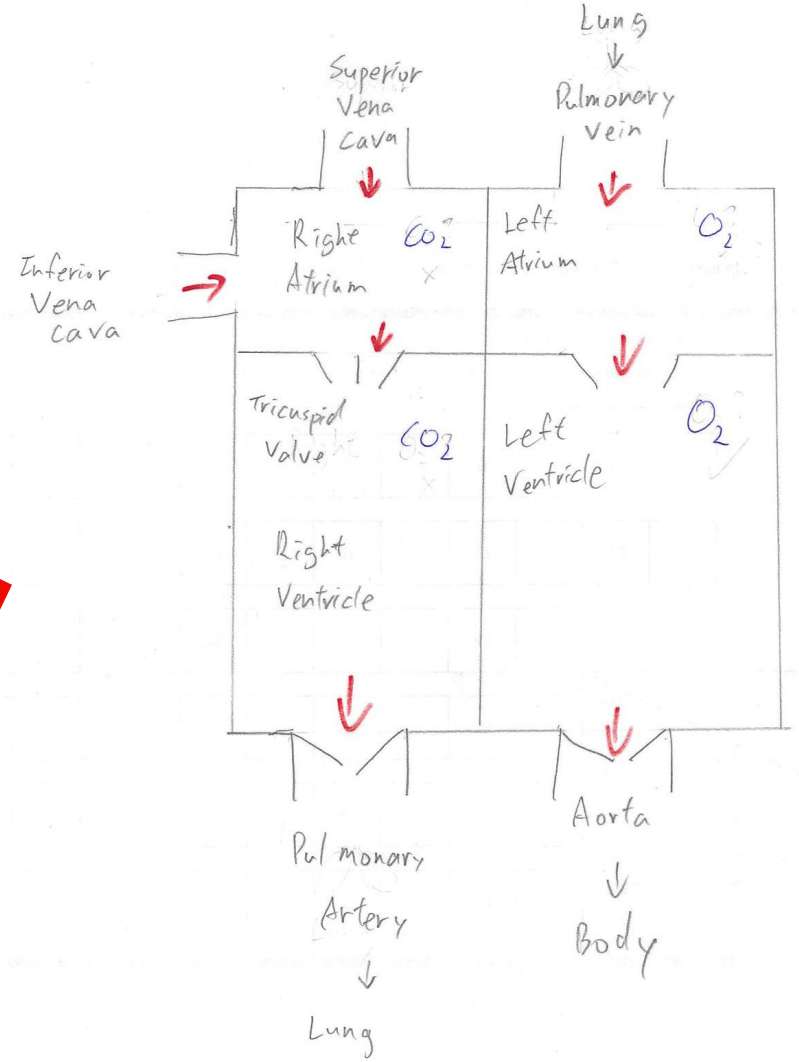
- Screenshot
- Label everything important



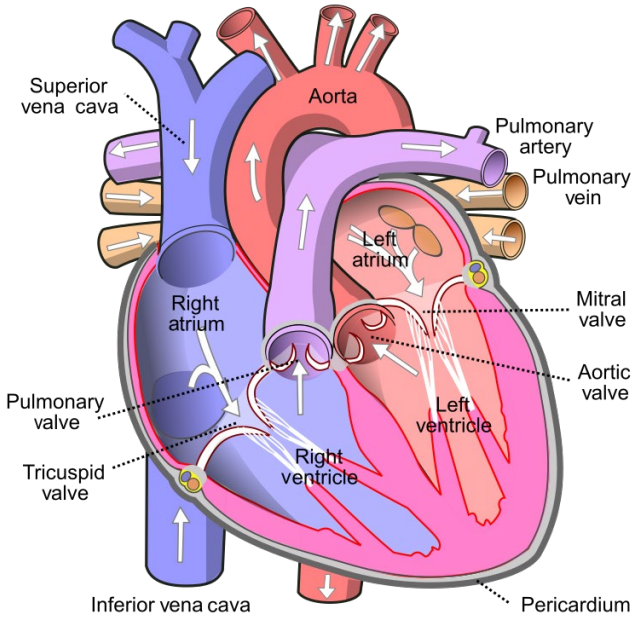
# Simplifying illustrations

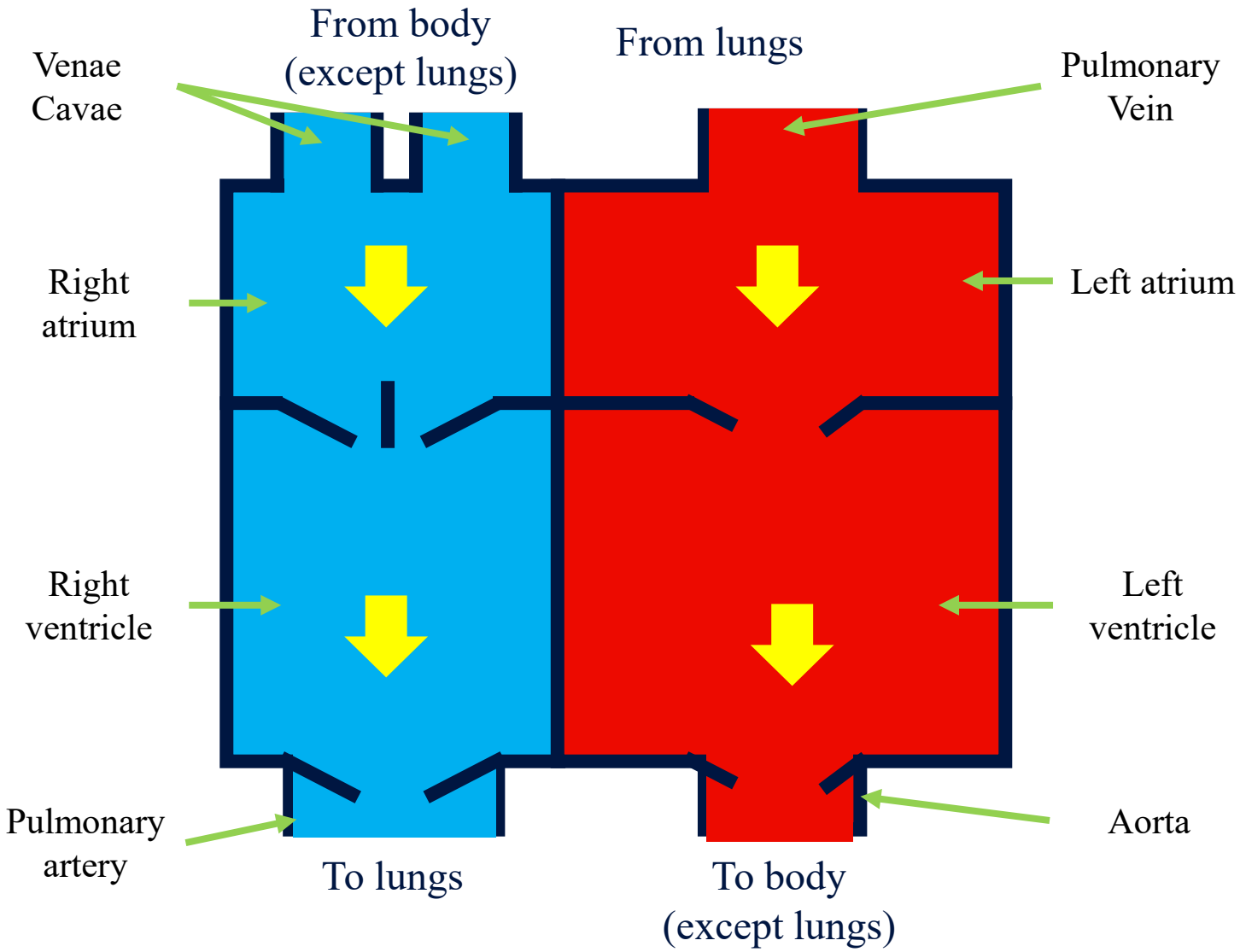
- All you need is the idea, not a classical painting
- Remove unnecessary details, keep what matters



# Simplifying illustrations



# Non-hierarchical table

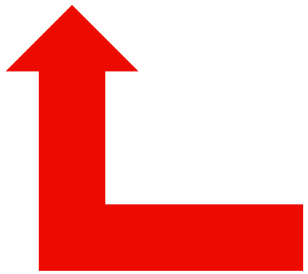
- Good for comparison
- Use symbols to keep the table clean
- Changing sequence of the leading column will NOT change the meaning

Transport of different areas

| Area | MTR | Bus/Minibus | Others |
|---|---|---|---|
| Kowloon City | Y | Y | N/A |
| Sai Kung | N | Y | Ferry |
| Tuen Mun | Y | Y | Cows |
| Kwun Tong | Y | Y | N/A |
| Lamma Island | N | N | Ferry |

# Non-hierarchical table: Example

| Types of interactions | Organism 1 | Organism 2 | Example |
|---|---|---|---|
| Predation | + | - | Wolf (+) & Sheep (-) |
| Competition | - | - | Cow & Horse (of the same field) |
| Commensalism | + | 0 | Tree frogs (+) & green plants (0) |
| Mutualism | + | + | Clown fish & Sea anemone |
| Parasitism | + | - | Bacteria (+) & Human (-) |



Changing sequence in this column will not change any meaning of the table

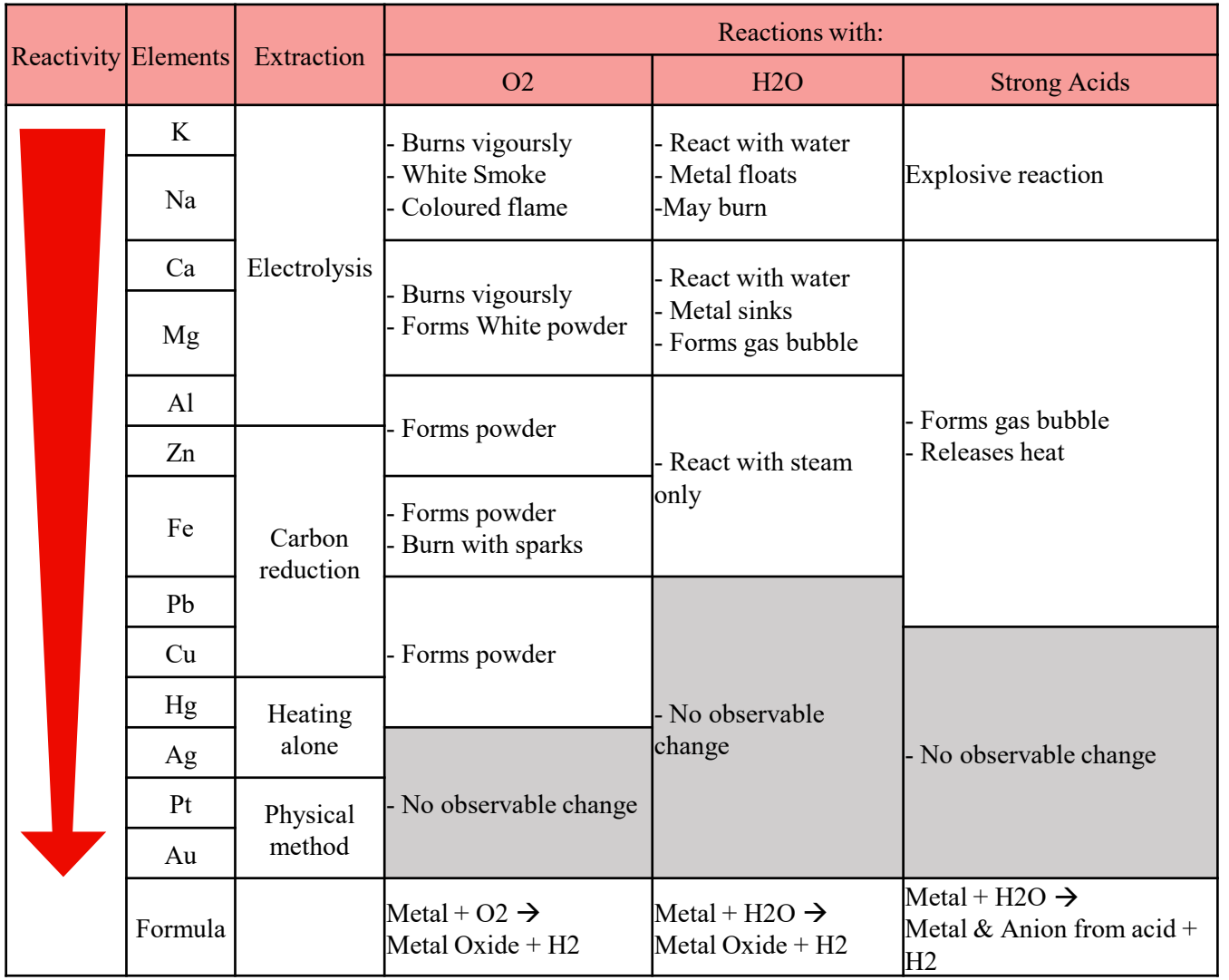
# Hierarchical table

- Good for comparison
- Make generalizations to keep the table clean

| Age | Hong Kong | Australia |
|---|---|---|
| 22 | University | |
| 21 | | University |
| 20 | | |
| 19 | | |
| 18 | Senior High School | Senior High school |
| 17 | | |
| 16 | | Junior High School |
| 15 | Junior High School | |
| 14 | | |
| 13 | | |

# Hierarchical table: Example

- Good for comparison
- Make generalizations to keep the table clean



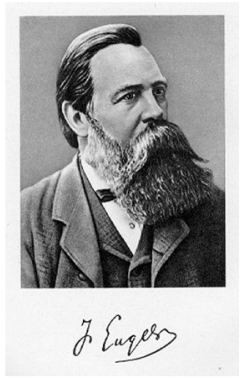
| Reactivity | Elements | Extraction | Reactions with: | | |
|---|---|---|---|---|---|
| | | | O2 | H2O | Strong Acids |
| | K | Electrolysis | - Burns vigoursly<br>- White Smoke<br>- Coloured flame | - React with water<br>- Metal floats<br>-May burn | Explosive reaction |
| | Na | | | | |
| | Ca | | - Burns vigoursly<br>- Forms White powder | - React with water<br>- Metal sinks<br>- Forms gas bubble | - Forms gas bubble<br>- Releases heat |
| | Mg | | | | |
| | Al | | - Forms powder | - React with steam only | |
| | Zn | Carbon reduction | | | |
| | Fe | | - Forms powder<br>- Burn with sparks | | |
| | Pb | | - Forms powder | - No observable change | |
| | Cu | | | | - No observable change |
| | Hg | Heating alone | | | |
| | Ag | | - No observable change | | |
| | Pt | Physical method | | | |
| | Au | | | | |
| | Formula | | Metal + O2 → Metal Oxide + H2 | Metal + H2O → Metal Oxide + H2 | Metal + H2O → Metal & Anion from acid + H2 |

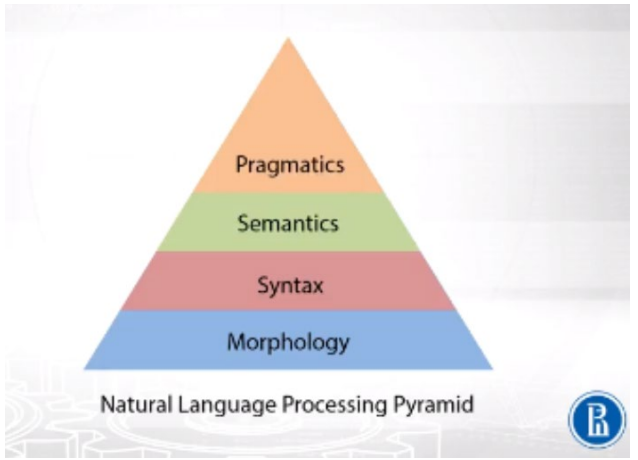
# Hierarchical table: Other examples

Social sciences

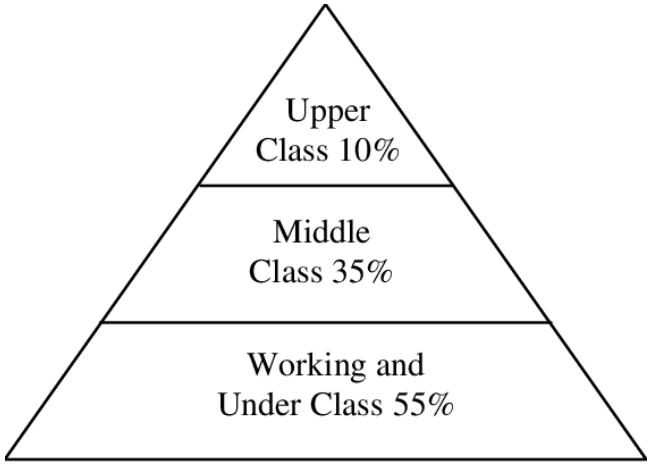
## Karl Marx's Concept of Class

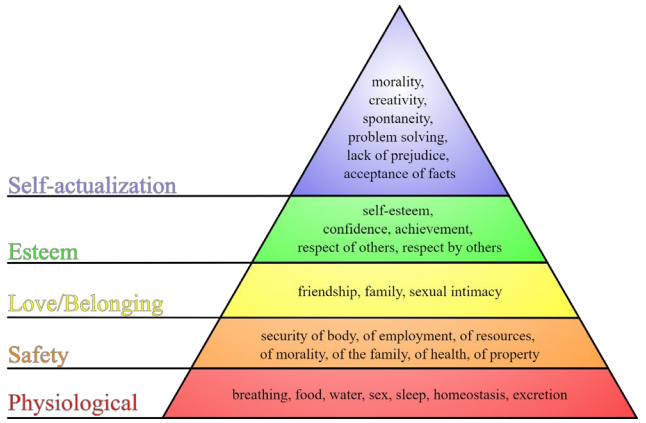
- **Exploitation of the proletariat by the bourgeoisie leads to alienation**
- **once the members become aware that they are being exploited they become a 'class for itself' instead of simply a 'class of itself' and rise up in revolution.**
- **This Class consciousness thus leads to class conflict**
- **These struggles advance society to become classless and egalitarian where the private ownership of production and property was abolished…all would be proletarian**






Linguistics

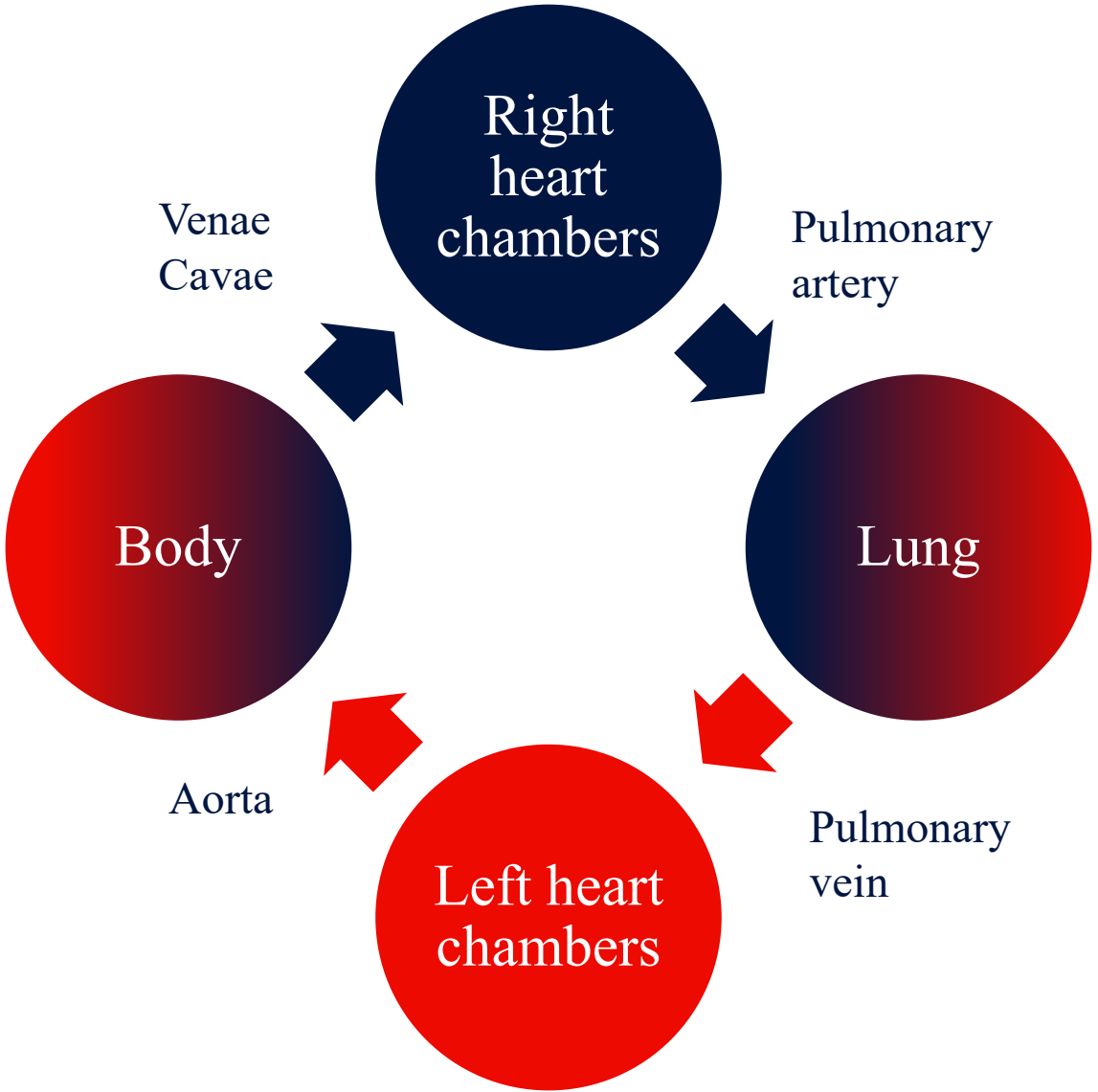


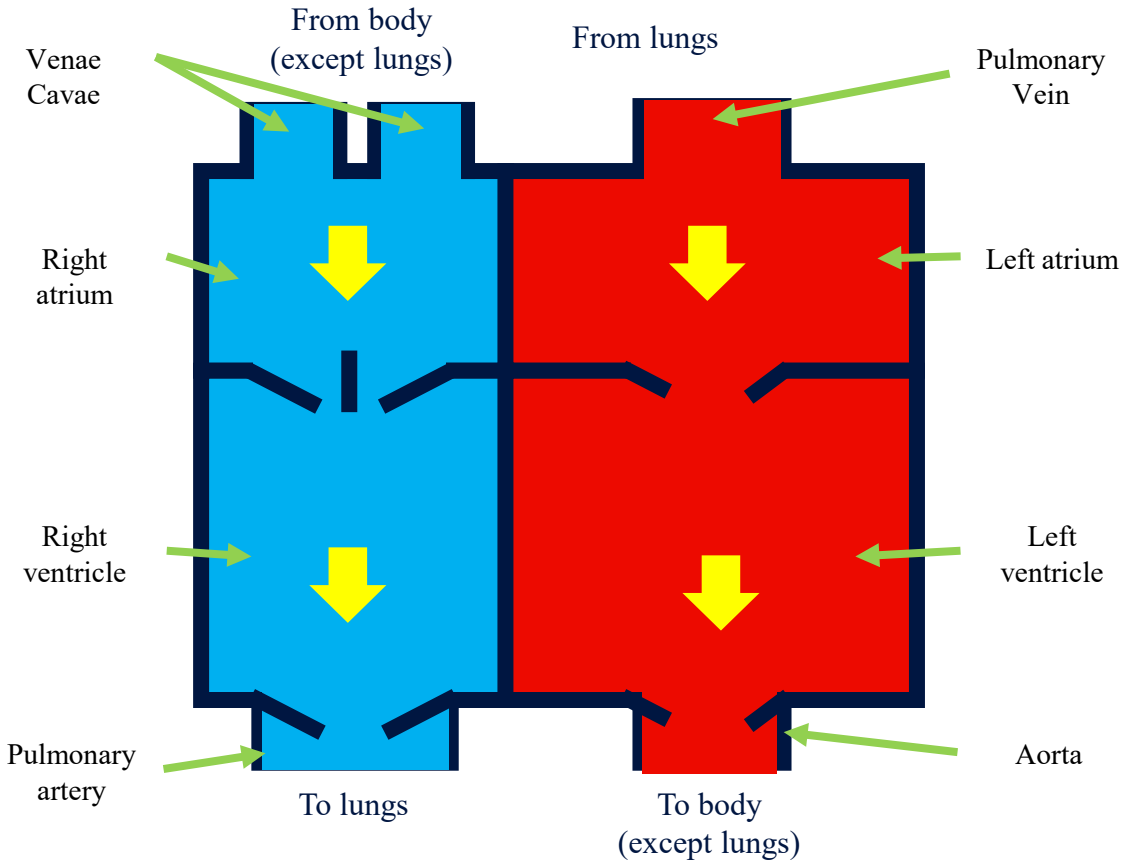

Psychology

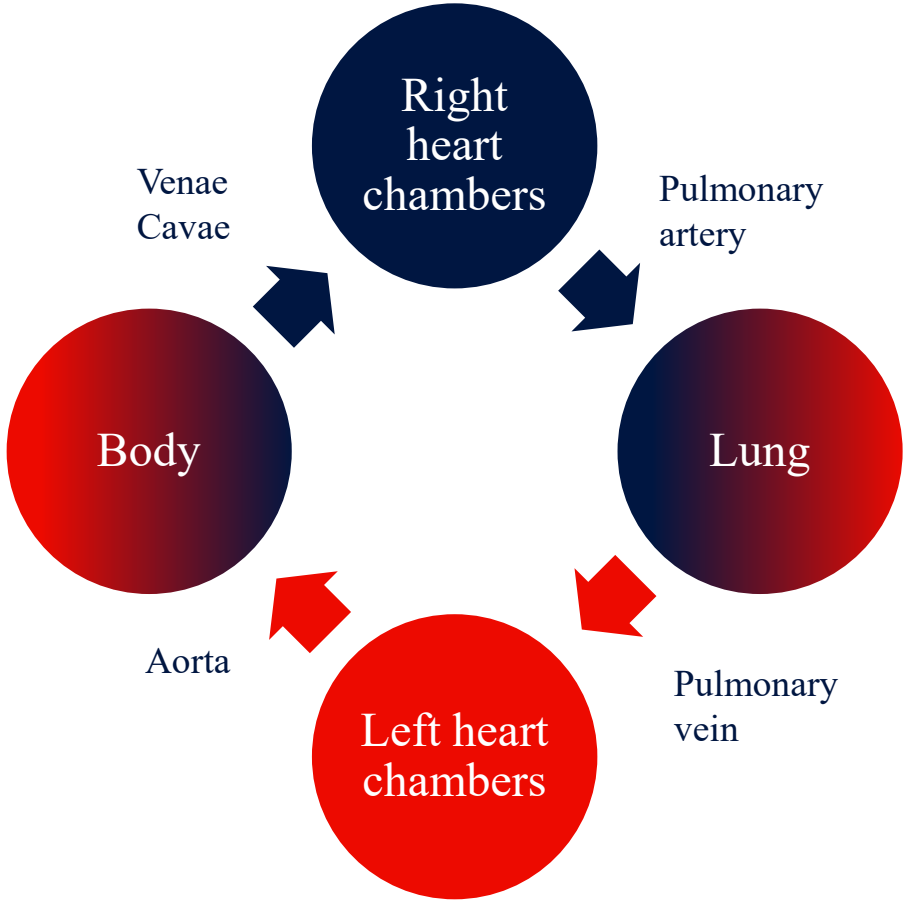
# Flowcharts

- Good for processes and stories
- Use simple words for each box
- Design your own labeling system



# Illustrations vs Flowcharts



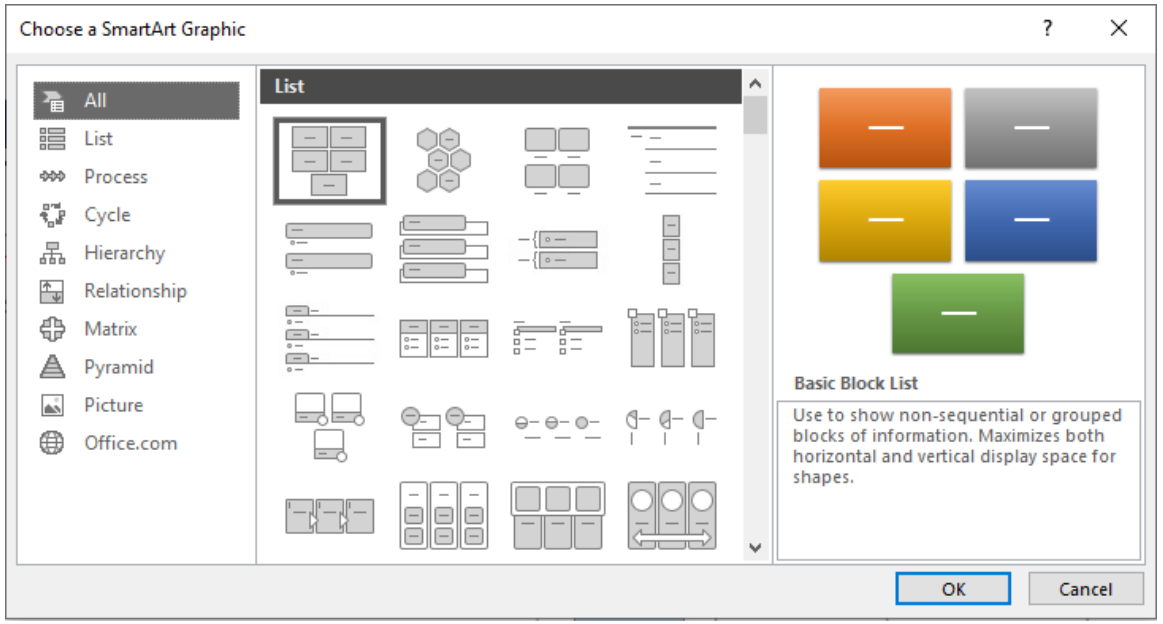



# Flowcharts

- Design your own labeling system

  *Or*

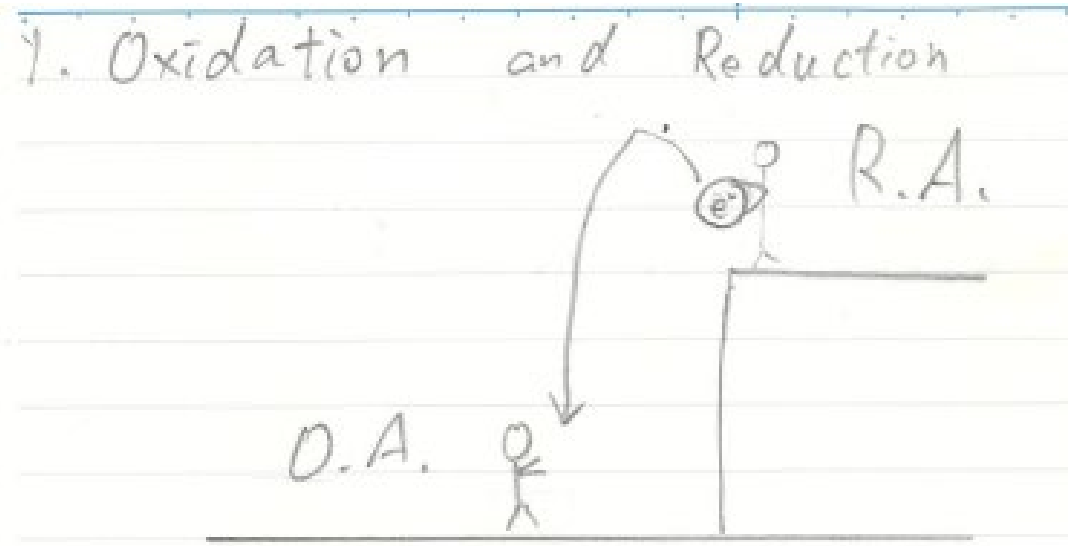
- Use SmartArt in MS PowerPoint




| Symbol | Name | Function |
|---|---|---|
|  | Start/end | An oval represents a start or end point |
|  | Arrows | A line is a connector that shows relationships between the representative shapes |
|  | Input/Output | A parallelogram represents input or output |
|  | Process | A rectangle represents a process |
|  | Decision | A diamond indicates a decision |

# Combine methods

- No all-purpose graphs
- Be creative
- Use your own way to show your understanding




| Keys | RA | OA |
|---|---|---|
| Work | Oxidation | Reduction |
| No. of e- | ↓ | ↑ |
| O.N. | ↑ | ↓ |

# Q&A Session

# Feedback

# Thank you!