



'CONCEPT' OF A CONFERENCE



Introductions and expectations



OBJECTIVES

- The theory behind concept mapping – scientific basis
- Types of maps and differences between them
- Concept maps – rules and principles
- How to use maps practically



King Faisal University, Al Hofuf

Manama, Bahrain

Add destination

Leave now

OPTIONS

Send directions to your phone

via Route 615

2 h 29 min

Fastest route now, avoids road closures on الملك عبدالعزيز

201 km

This route has tolls.

This route crosses a country border.

DETAILS

Dammam
الدمام

Salasil
صلاصل

New Ain Dar
عين دار الجديدة

Buqayq
بقيق

Hubail
بحيرة الحبيل

Al Oyun
العيون

King Faisal University

6466

80

40

75

10

80

75

6614

7100

6445

6448

5

5

80

80

6448

2 h 29 min

201 km

Bahrain

Manama
المنامة

Riffa
الرفاع

Dukh
خان

A stylized illustration at the bottom right of the image. It features a person in a grey shirt and blue pants standing on a blue bar chart with three bars of increasing height. The person is holding a large, bold, yellow letter 'P'. The background is a dark blue gradient with white clouds at the bottom left.



Exercise 1 : The use of maps in education



- Organize/Summarize
- Integrate
- Assessment
- Clarify/ Understand/ Analyze /Memorize
- ‘Metacognition’



- Concept maps
- Mind maps
- Argument maps
- Flowcharts/ algorithms/organizational charts



- What is a concept?
- *A mental representation, which the brain uses to denote a class of things which can be grouped together*



Animals

Dogs

Cats

Cows

Thing
concepts

Holstein

Jersey

Angus

Event
concepts

Walk

Reproduce

Breathe

Linking
words

Leads to

Is/Are

Caused by

- Love is blind

- Marriage opens your eyes



So is there evidence that concept maps help
in education/PBL?



PBL

Do students exposed to PBL have more knowledge?



The generic skills of PBL



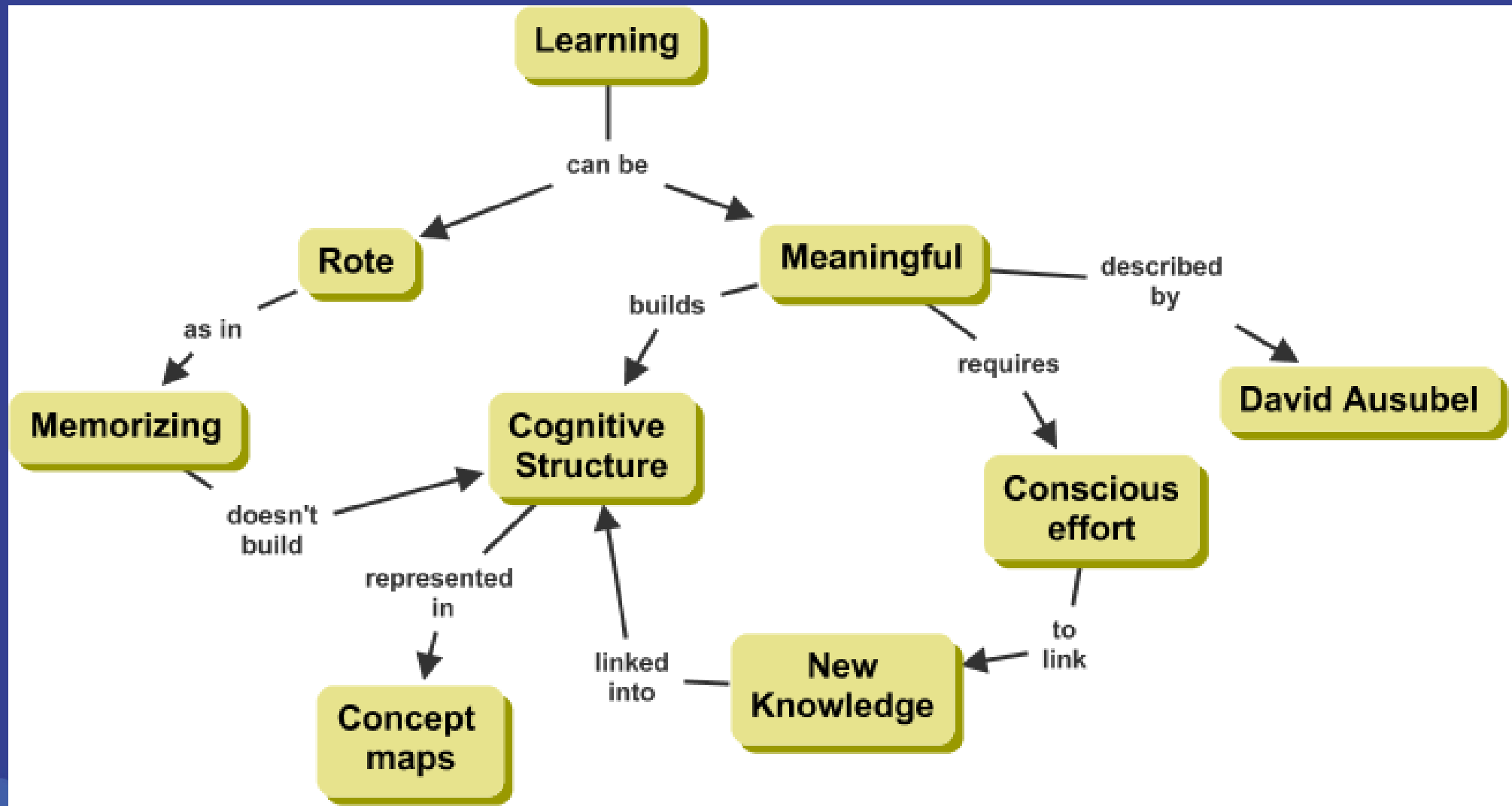
PBL

- The 3 C's- constructive, collaborative, contextual
- Active learning
- Deep learning



Rote learning vs meaningful learning





Normal cognitive structure

- Hierarchical
- Progressively differentiated
- Integrative reconciliation



People generally remember...
(learning activities)

People are able to...
(learning outcomes)

10% of what they read

20% of what they hear

30% of what they see

50% of what they see and hear

70% of what they say and write

90% of what they do

Passive
Learning

Active Learning

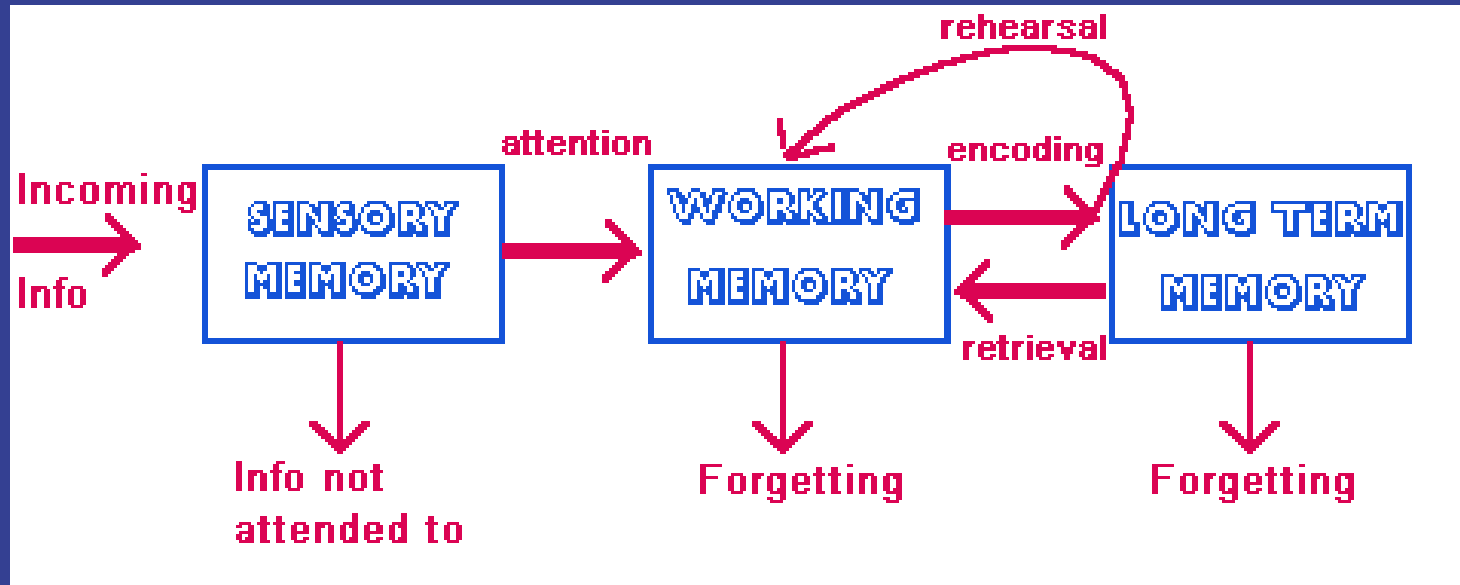
Define
Describe
List
Explain

Demonstrate
Apply
Practice

Analyze
Define
Create
Evaluate







S U A K U B I M S K A





IBM

USA

UK

KSA





Cognitive Load Theory

What is it and why should I care?



A Picture



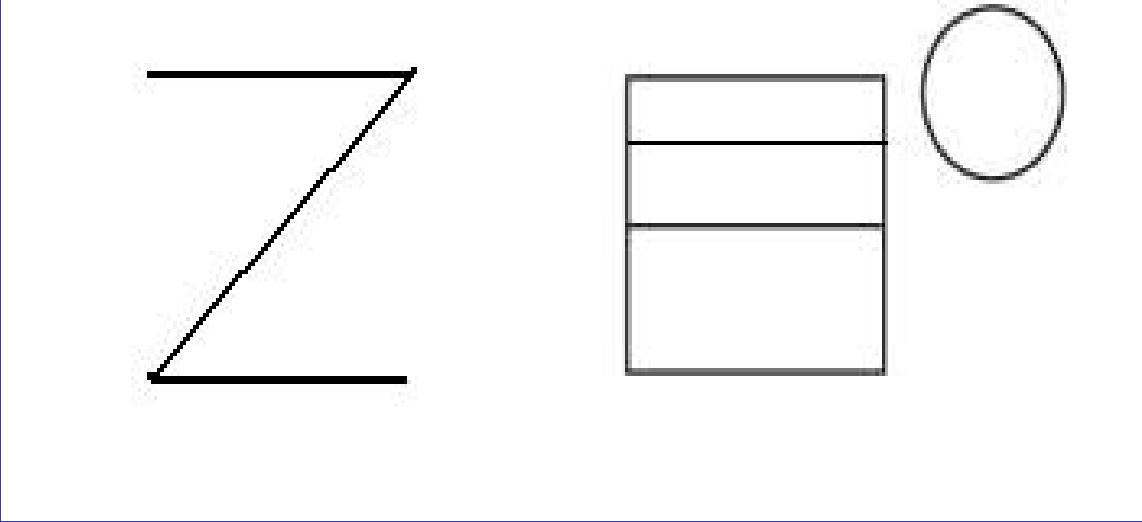
is worth
=

Creamy, delicious, yummy,
fudge ice cream, smooth,
chocolate-chip mint ice
cream, strawberry ice
cream with real chunks of
strawberry, colored sugar
sprinkles, waffle sugar
cone, sweet, wonderful,
tastes great, cold, nice to
eat, dessert, good yummy
toppings, chocolate
sprinkles, comforting,
good fun, dipping, terrific,

A thousand words.

©2003 E. Aoyama





A

There are three figures together. On the right extreme is a z like shape. On the extreme left next to a square is the circle slightly elevated from the baseline compared to the other figures. In the center there is a rectangle which is divided into three rectangles with the smallest rectangle at the top. Circle is on the 5.00 clock position compared

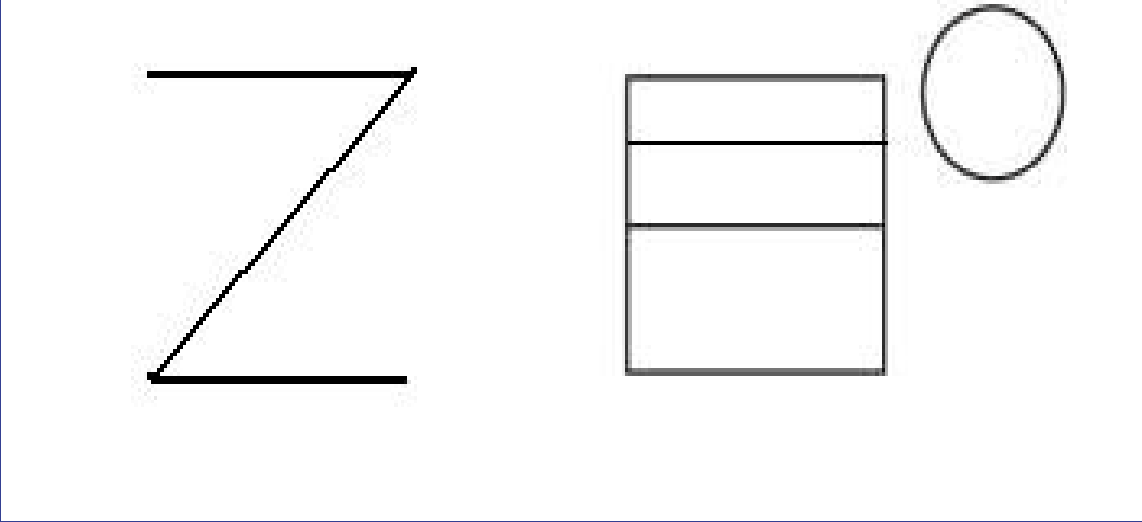
B

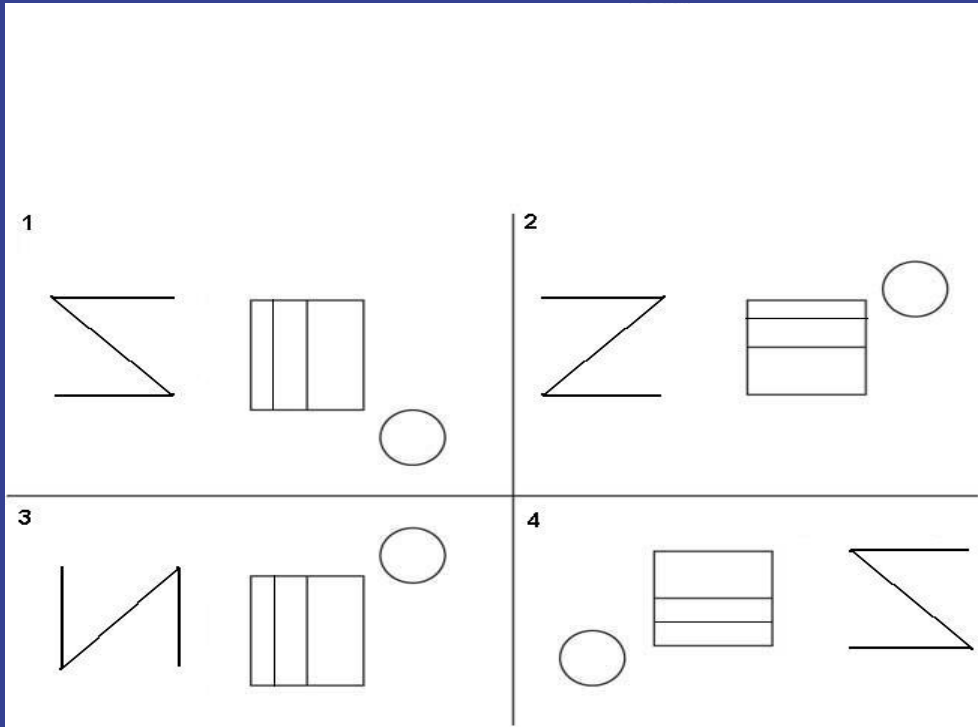
There are three figures together. On the left is a z shape. On the extreme right is the circle slightly elevated from the baseline compared to the other figures. In the center there is a square which is divided into three unequal rectangles with the smallest rectangle at the top. The circle on the extreme right is at the 3.00 clock

C

There are three figures together. On the left extreme is a z shape. On the extreme right is the circle slightly elevated from the baseline compared to the other figures. In the center there is a square which is divided into three unequal rectangles with the smallest rectangle at the top. The circle on the extreme right is at the 7.00 clock







To cut a long story short

- -If students can represent complex set of relationships in a diagram, they are more likely to understand, remember and analyze those components
- -Deep learning
- -Active learning



Is there actual scientific evidence that concept maps work?

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Joseph D Novak



- Definition of concept maps
- *'A schematic device for representing a set of concept meanings in a framework of propositions'*



Rules??



.FEROZE KALIYADAN PHOTOGRAPHY



.FEROZE KALIYADAN PHOTOGRAPHY





- *Rhein II* -by Andreas Gursky (1999)
- Sold for \$4.3 million -the most expensive photograph ever sold



The most important rule in conventional
artistic photography...

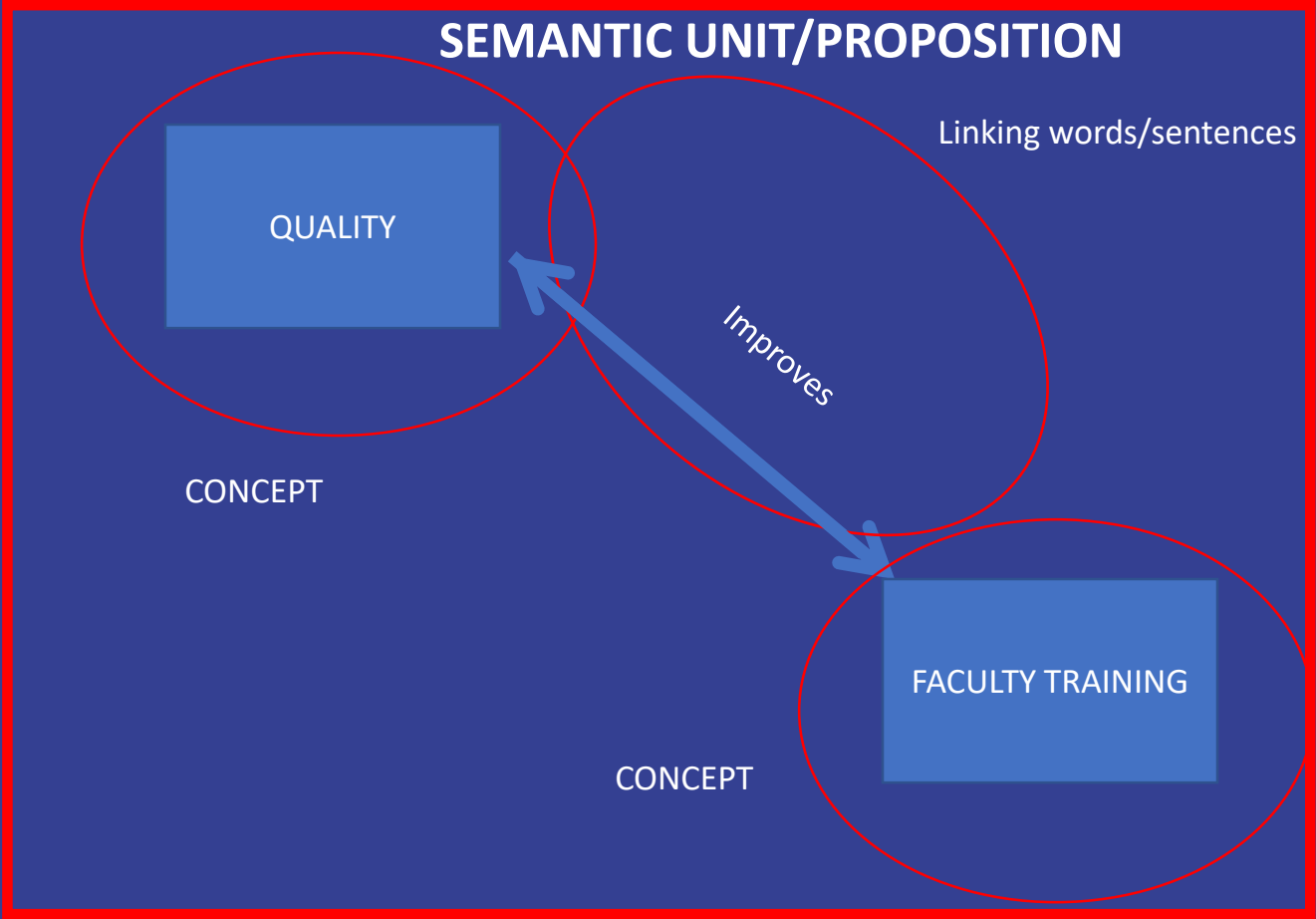
THERE ARE NO RULES!



General steps in making a concept map

- Tries to answer a “focus question”
- Identify general concepts
- Identify lower order concepts and place them below the higher level concepts (‘Subsumption’)
- Add linking words (‘progressive differentiation’)
- Integrate concepts across the map (‘integrative reconciliation’)
- Give examples for concepts





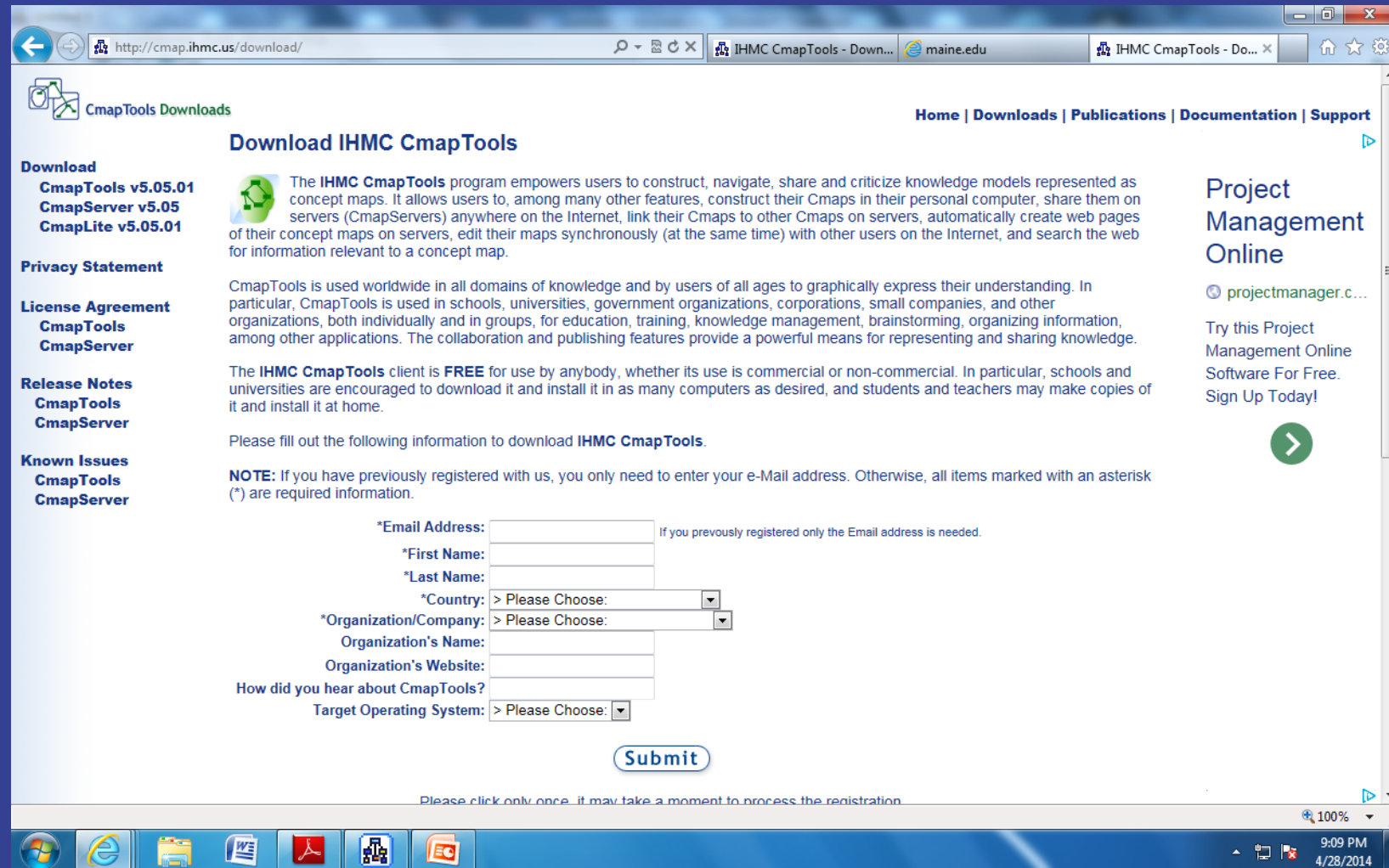
Linking words

- The most difficult part of the concept map
- Differentiates from other types of mapping



IHMC Cmap tools

http://cmap.ihmc.us/downlo



The screenshot shows a web browser window with the address bar displaying "http://cmap.ihmc.us/download/". The page title is "CmapTools Downloads". The navigation bar includes links for "Home", "Downloads", "Publications", "Documentation", and "Support". The main content area is titled "Download IHMC CmapTools". On the left, there are links for "Download", "Privacy Statement", "License Agreement", "Release Notes", and "Known Issues", each with sub-links for "CmapTools v5.05.01", "CmapServer v5.05", and "CmapLite v5.05.01". The main text describes the IHMC CmapTools program, its features, and its use in various domains. It states that the IHMC CmapTools client is FREE for use by anybody. Below the text is a registration form with fields for *Email Address, *First Name, *Last Name, *Country, *Organization/Company, Organization's Name, Organization's Website, How did you hear about CmapTools?, and Target Operating System. A "Submit" button is at the bottom of the form. A note at the bottom of the page says "Please click only once, it may take a moment to process the registration." On the right side, there is a section for "Project Management Online" with a link to "projectmanager.c..." and a button to "Sign Up Today!".

Download IHMC CmapTools

The IHMC CmapTools program empowers users to construct, navigate, share and criticize knowledge models represented as concept maps. It allows users to, among many other features, construct their Cmaps in their personal computer, share them on servers (CmapServers) anywhere on the Internet, link their Cmaps to other Cmaps on servers, automatically create web pages of their concept maps on servers, edit their maps synchronously (at the same time) with other users on the Internet, and search the web for information relevant to a concept map.

CmapTools is used worldwide in all domains of knowledge and by users of all ages to graphically express their understanding. In particular, CmapTools is used in schools, universities, government organizations, corporations, small companies, and other organizations, both individually and in groups, for education, training, knowledge management, brainstorming, organizing information, among other applications. The collaboration and publishing features provide a powerful means for representing and sharing knowledge.

The IHMC CmapTools client is **FREE** for use by anybody, whether its use is commercial or non-commercial. In particular, schools and universities are encouraged to download it and install it in as many computers as desired, and students and teachers may make copies of it and install it at home.

Please fill out the following information to download IHMC CmapTools.

NOTE: If you have previously registered with us, you only need to enter your e-Mail address. Otherwise, all items marked with an asterisk (*) are required information.

*Email Address: If you previously registered only the Email address is needed.

*First Name:

*Last Name:

*Country: > Please Choose:

*Organization/Company: > Please Choose:

Organization's Name:

Organization's Website:

How did you hear about CmapTools?

Target Operating System: > Please Choose:

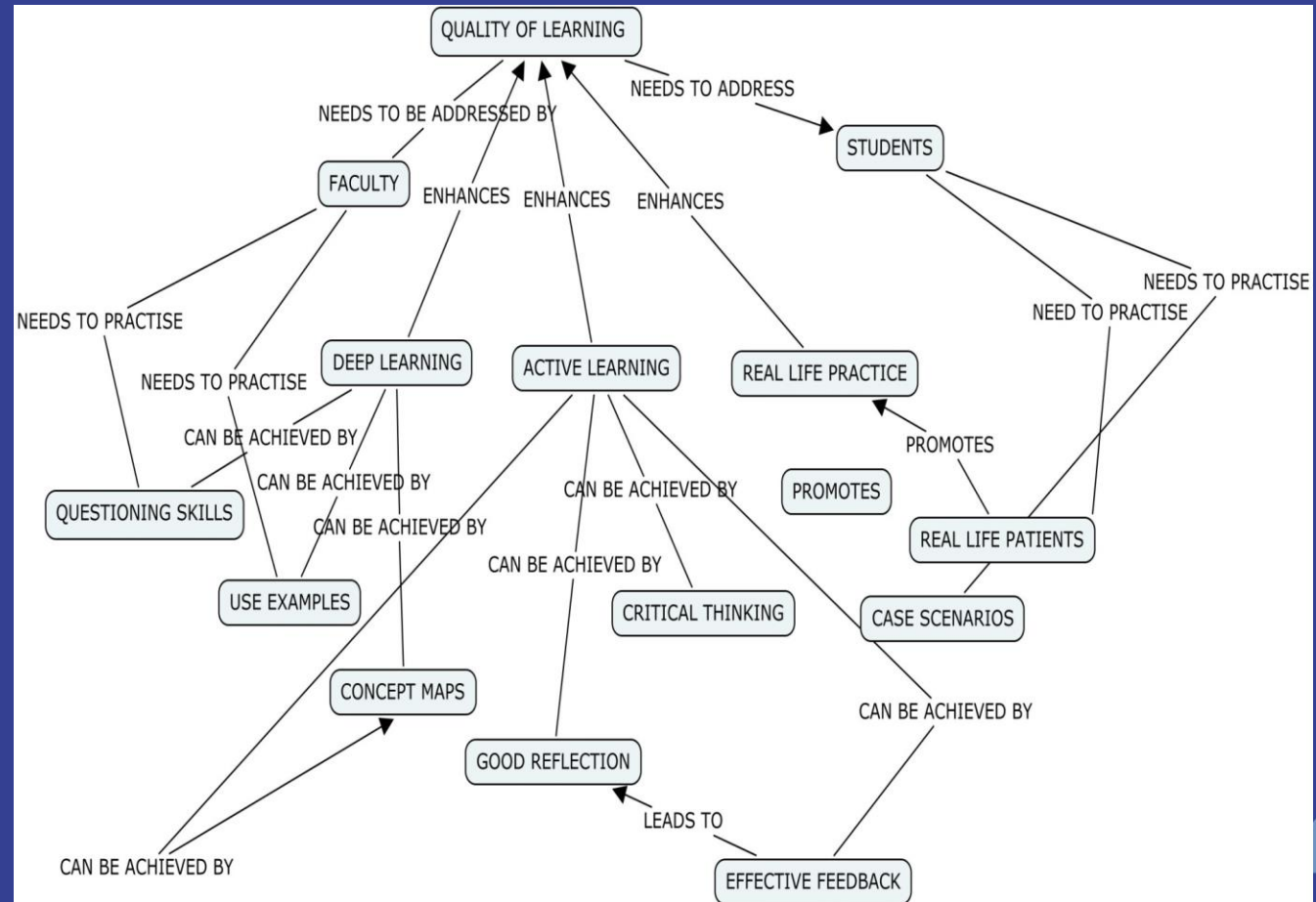
Submit

Please click only once, it may take a moment to process the registration.

Project Management Online

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Try this Project Management Online Software For Free. Sign Up Today!



Revise and reflect !!!



So how can you use concept maps practically?

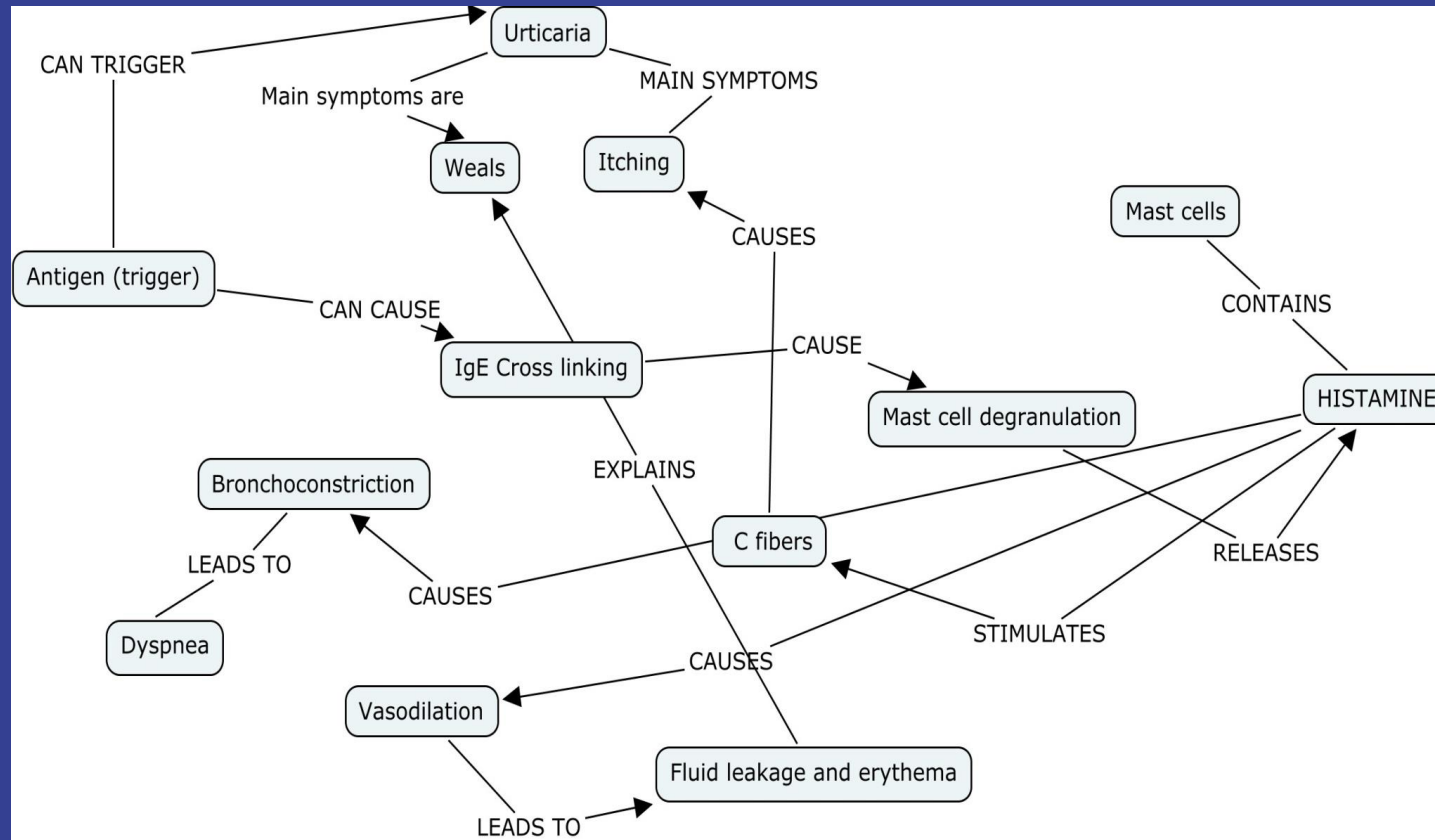
- Summarizing
- Encourage students to make/complete maps (in lectures/ small groups)
- Collaborative learning/ PBL
- Curriculum/ lesson plan planning/ route mapping
- Assessment



Summarizing sessions



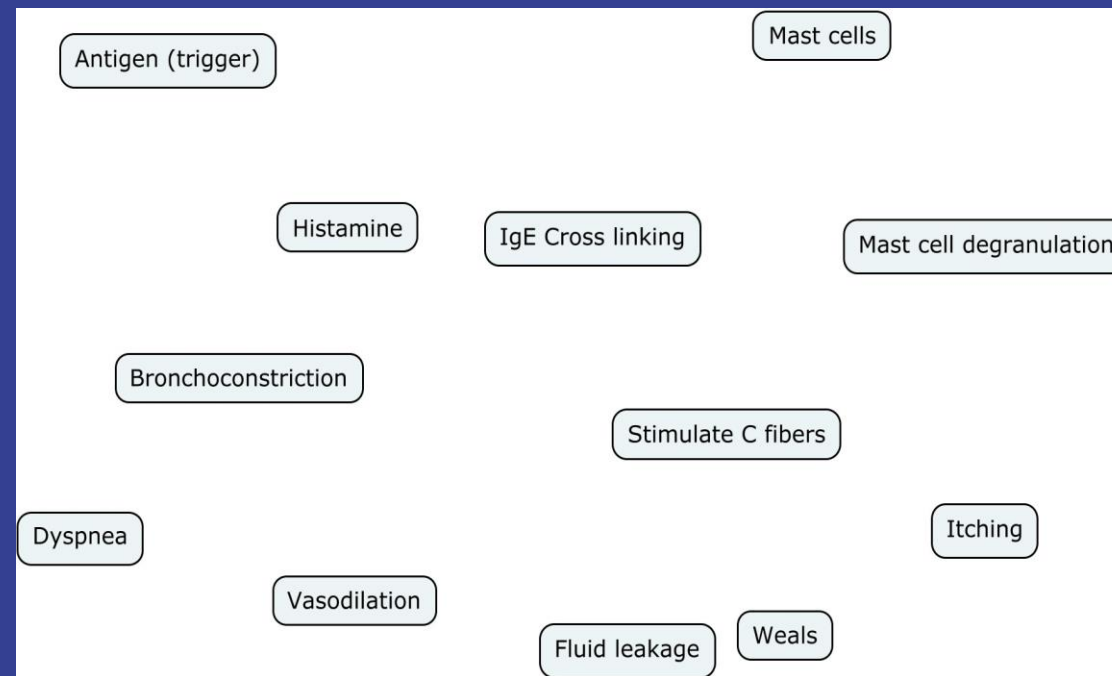
How do you explain the symptoms of urticaria?



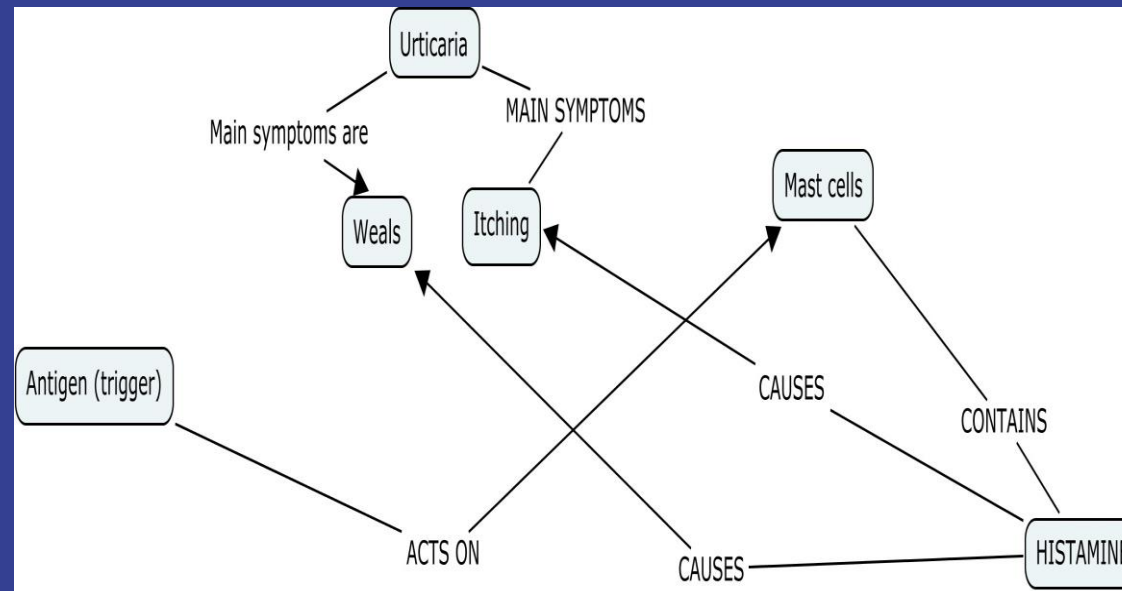
Ask students to make/ complete concept maps



The parking lot



The expert skeleton



Curriculum development/ making lesson plans



HOW CAN YOU USE CONCEPT MAPS FOR ASSESSMENT?

- Formative
- Summative



- Global assessment - does the map convey the key concepts in a clear and simple manner?



Rubric – Bartel's

• Concepts and Terminology

- 3 points Shows an understanding of the topic's concepts and principles and uses appropriate terminology and notations
- 2 points Makes some mistakes in terminology or shows a few misunderstandings of concepts
- 1 point Makes many mistakes in terminology and shows a lack of understanding of many concepts
- 0 points Shows no understanding of the topic's concepts and principles

- Knowledge of the Relationships among Concepts
- 3 points Identifies all the important concepts and shows an understanding of the relationships among them
- 2 points Identifies important concepts but makes some incorrect connections
- 1 point Makes many incorrect connections
- 0 points Fails to use any appropriate concepts or appropriate connections

Ability to Communicate through Concept Maps

3 points Constructs an appropriate and complete concept map and includes examples; places concepts in an appropriate hierarchy and places linking words on all connections; produces a concept map that is easy to interpret

2 points Places almost all concepts in an appropriate hierarchy and assigns linking words to most connections; produces a concept map that is easy to interpret

1 point Places only a few concepts in an appropriate hierarchy or uses only a few linking words; produces a concept map that is difficult to interpret

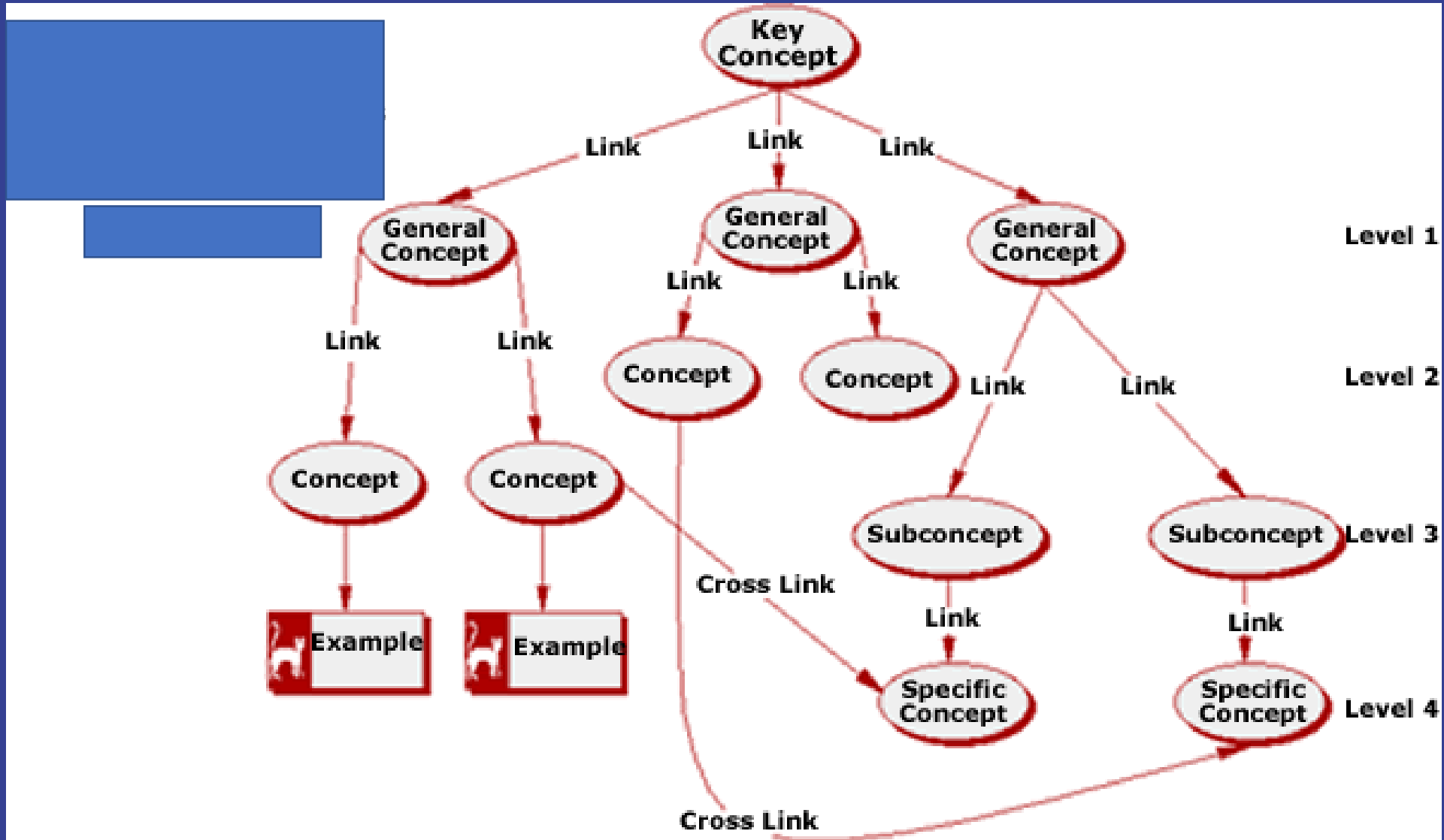
0 points Produces a final product that is not a concept map



Objective method _ Novak and Gowin

1. Meaningful connections – each connection – 1 point
 2. Heirarchy- 5 points for each valid level of hierarchy
 3. Cross links – 10 points for one which is valid and significant
 4. Examples – 1 point each
- N: Can express as percentage of an ideal map





- So are students who use more complex maps 'better' and more knowledgeable?



- A map is a very personal thing
- Each person uses it in their own way
- A good student might need only a simple map to understand/remember complex concepts



Disadvantages/ criticisms of concept maps

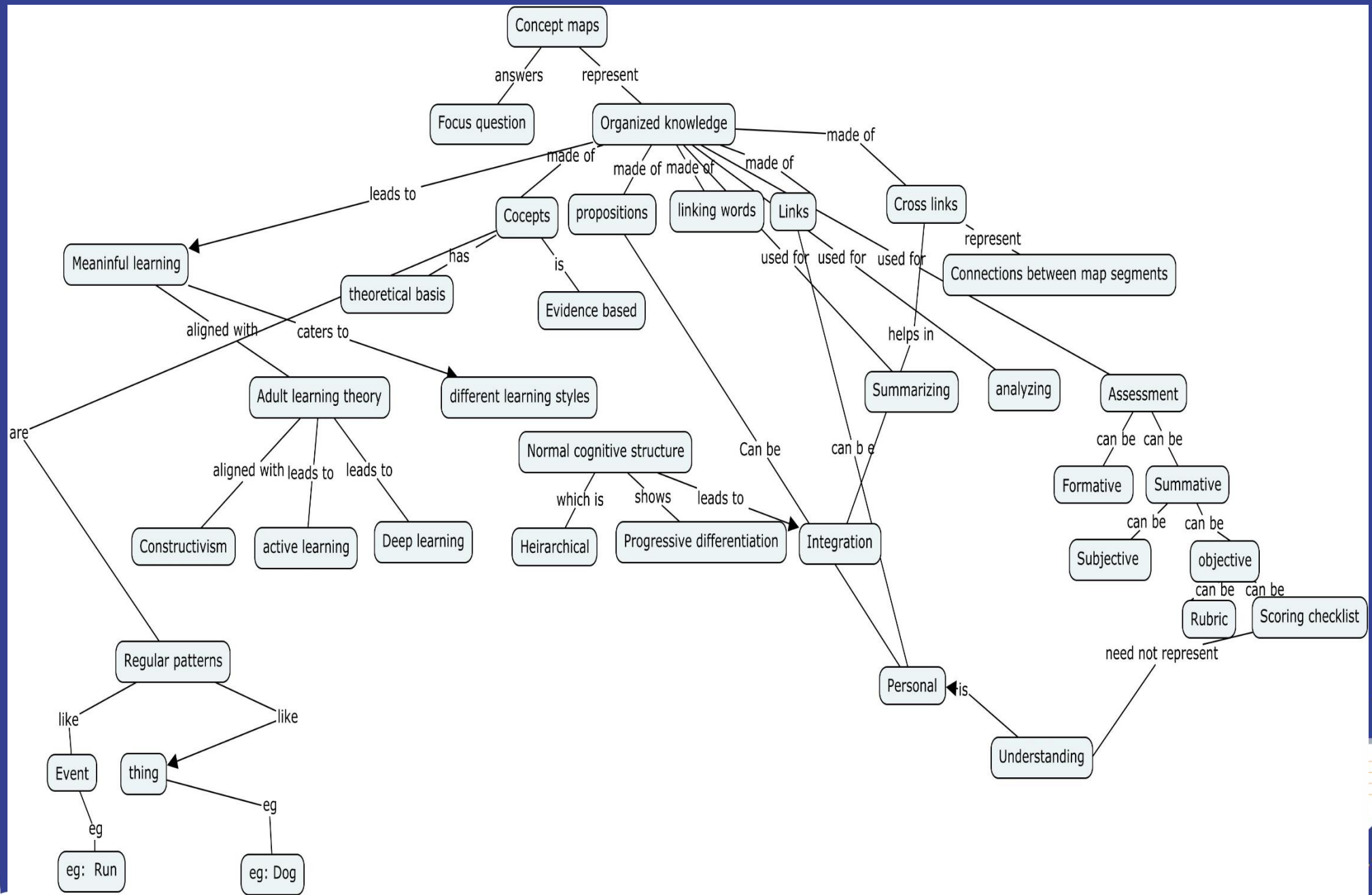
- Too rigid rules – both teachers and students take time to understand
- Does not encourage creativity / Not useful for brainstorming
- Assessment??



Practice

- Let us make a concept map on concept maps!





The concept of brainstorming

**LET A THOUSAND
FLOWERS BLOOM AND
WE'LL SEE WHAT
FLOURISHES.**

QUOTEHD.COM

Clara Hemphill

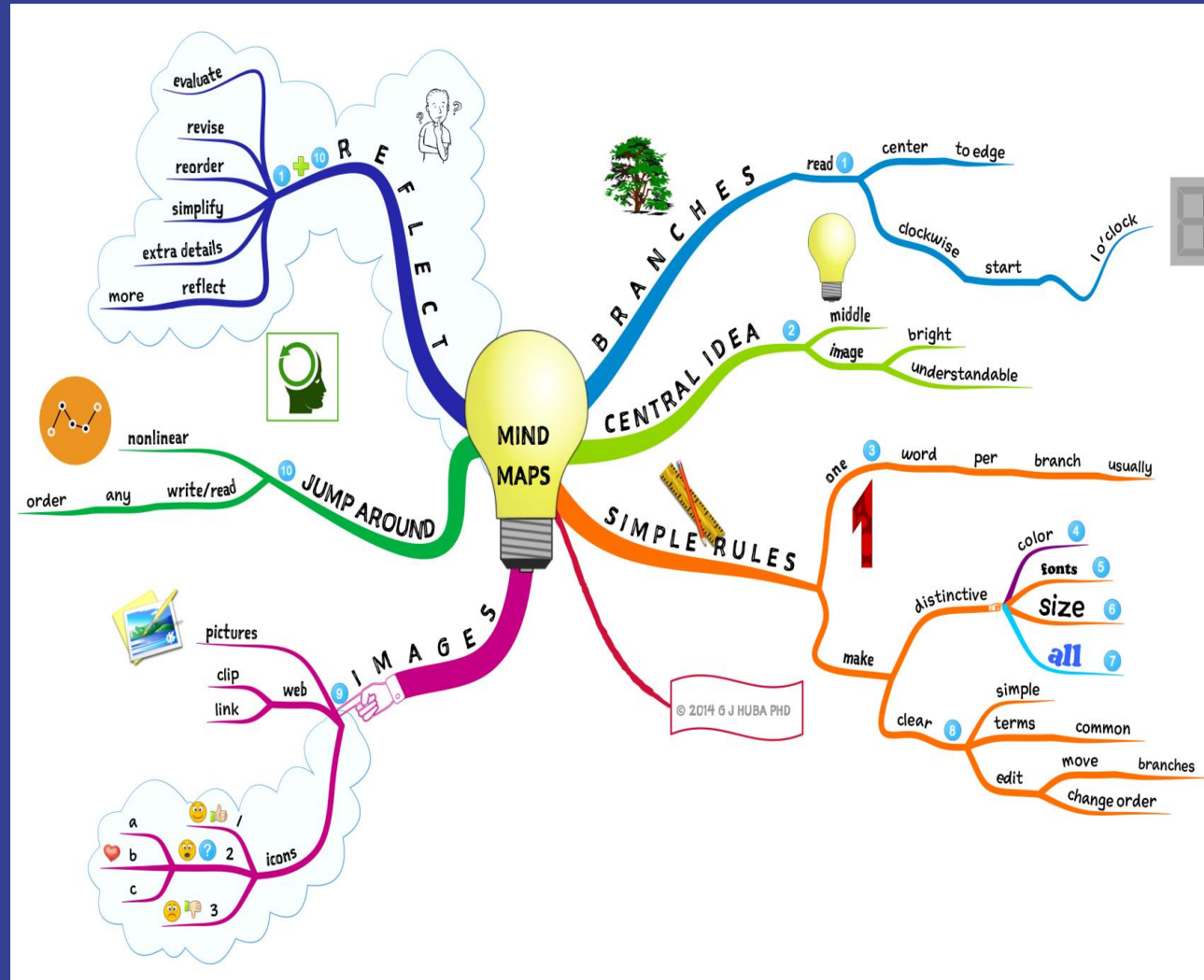


Exercise

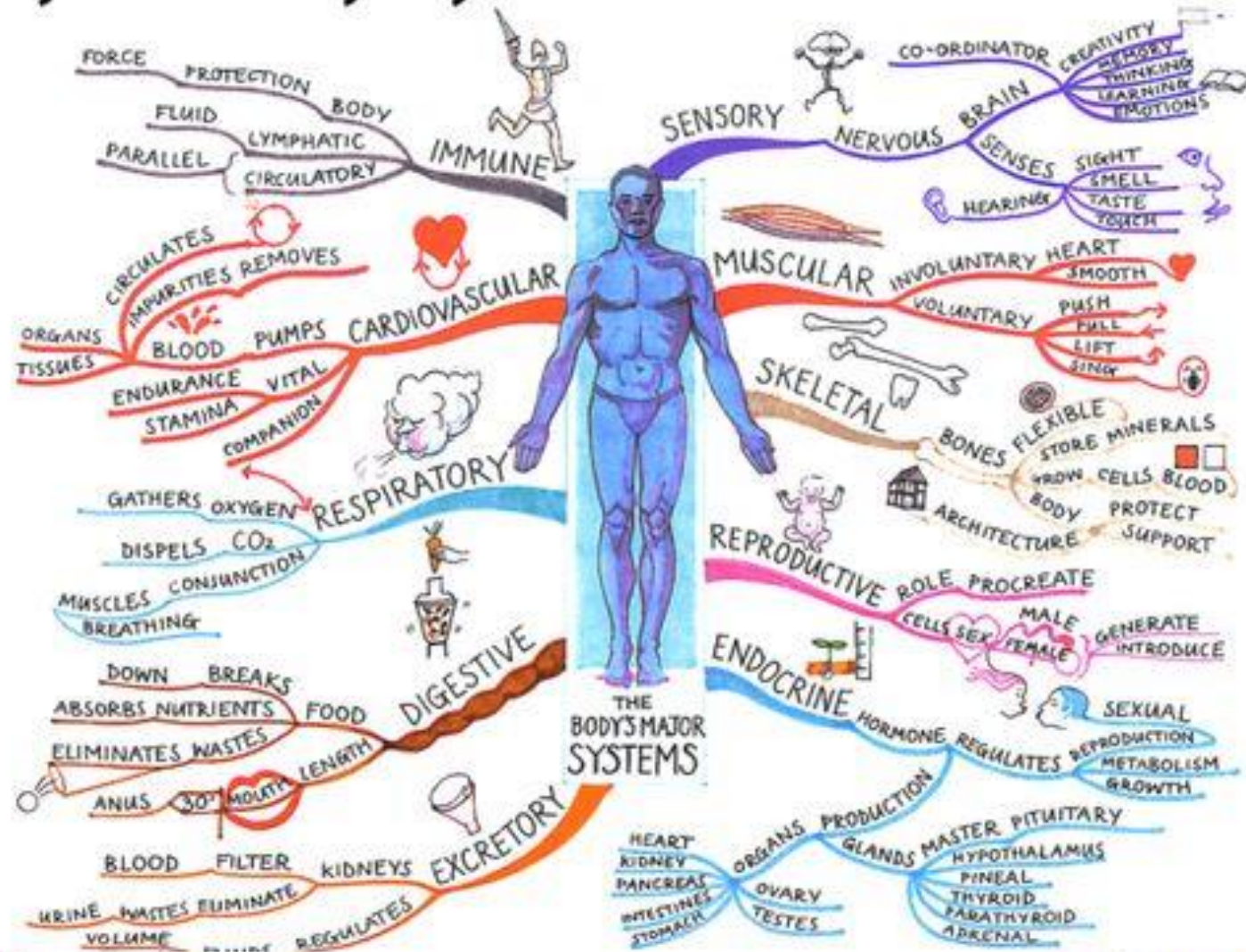
- Let's brainstorm on *scientific publications*



Mind maps



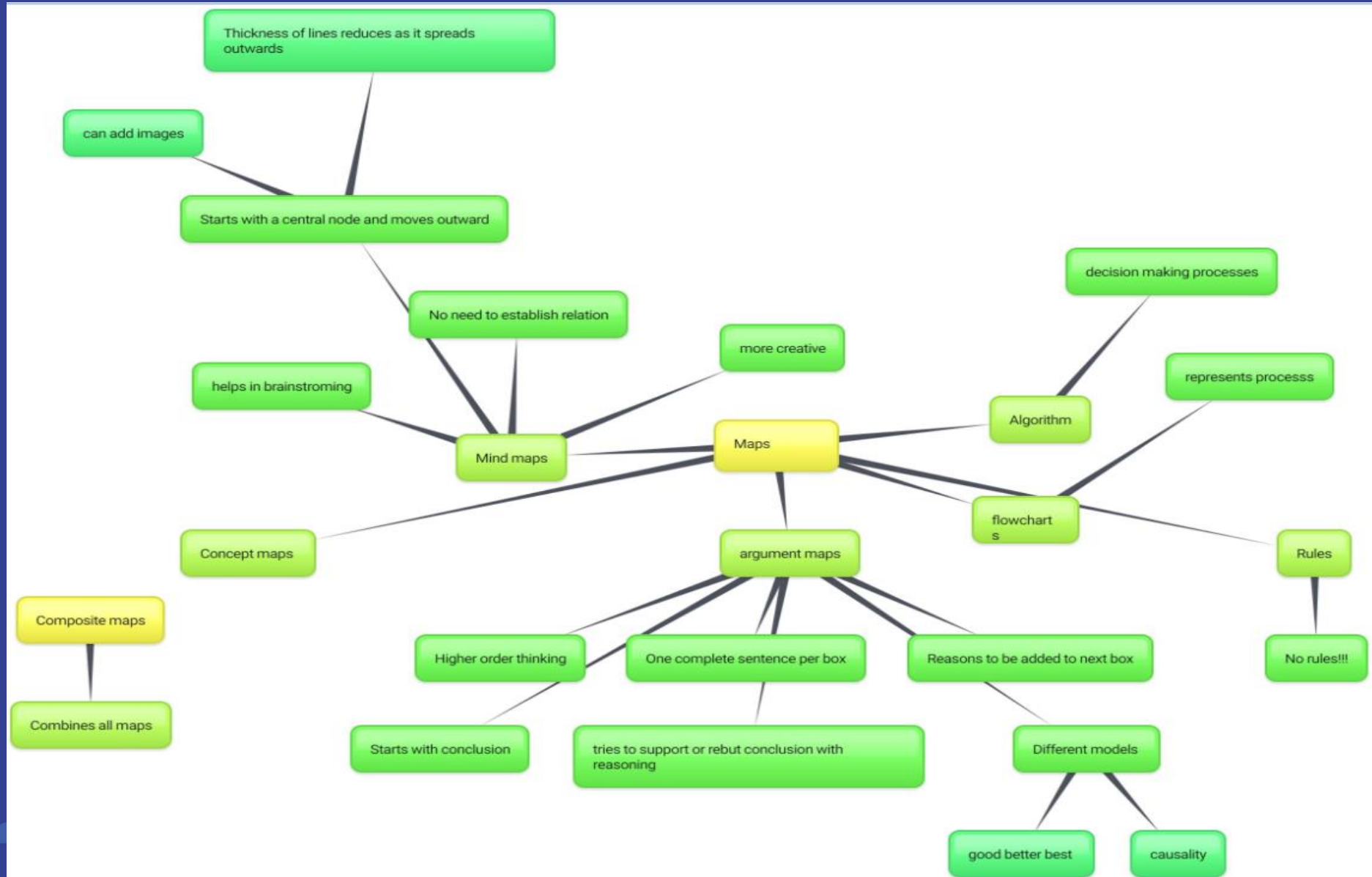
Study of Body Systems



Mind maps

- -Helps to organize ideas and broad concepts
- -Build ideas
- -Creativity
- -Memorization of larger topics





Software

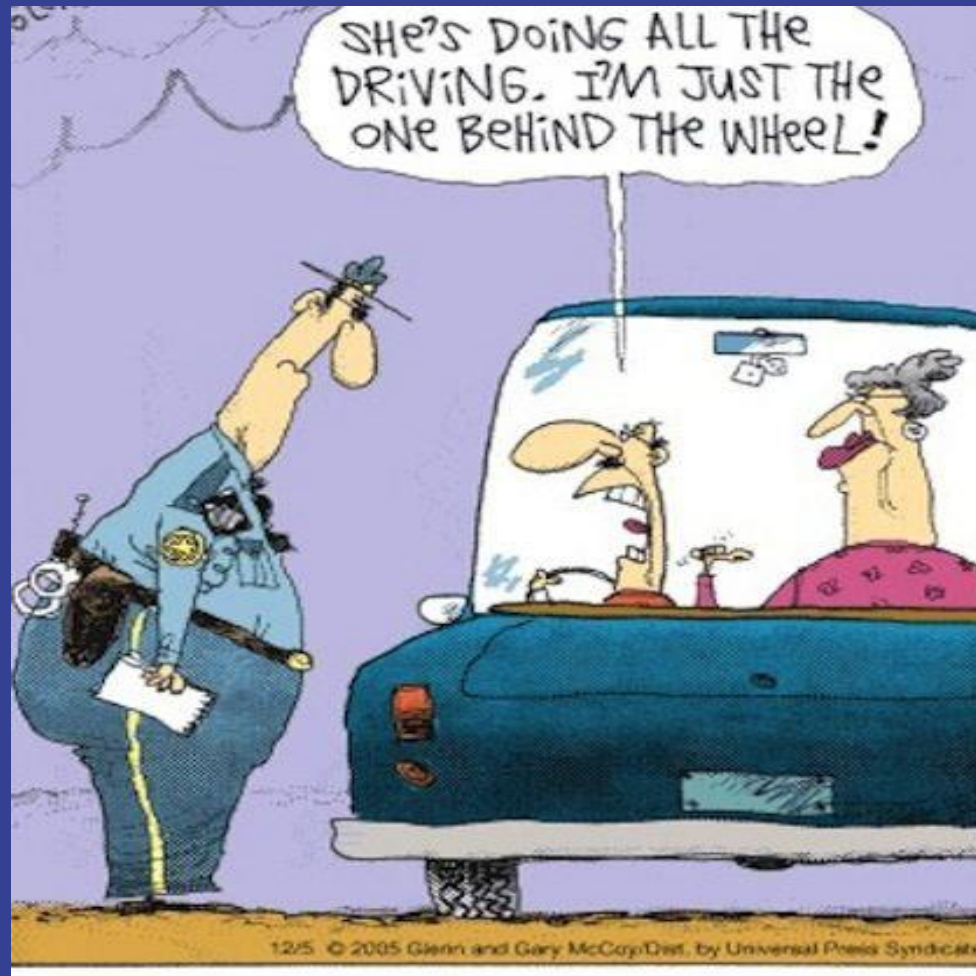
- <https://www.mindmup.com/>
- <https://www.canva.com/graphs/mind-maps/>
- <https://bubbl.us/>



ARGUMENT MAPPING



Females are better drivers as compared to males



- Argument mapping is a way to visually show the logical structure of arguments.



BLOOM'S REVISED TAXONOMY

Higher-order thinking

Creating

Generating new ideas, products, or ways of viewing things
Designing, constructing, planning, producing, inventing.

Evaluating

Justifying a decision or course of action
Checking, hypothesising, critiquing, experimenting, judging

Analysing

Breaking information into parts to explore understandings and relationships
Comparing, organising, deconstructing, interrogating, finding

Applying

Using information in another familiar situation
Implementing, carrying out, using, executing

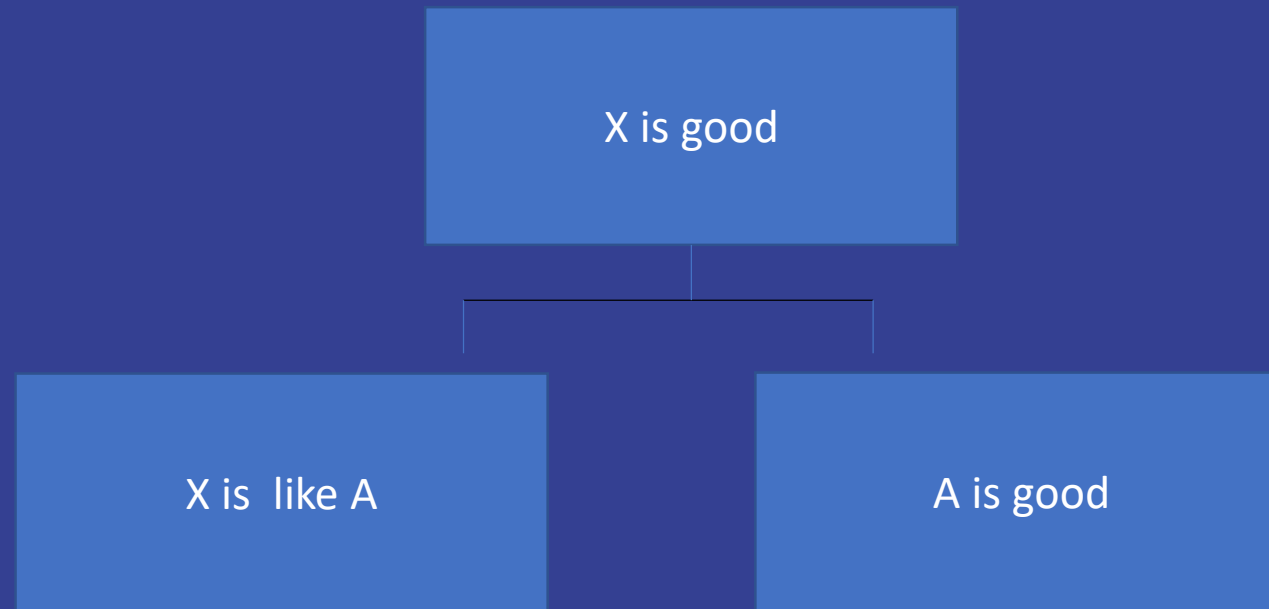
Understanding

Explaining ideas or concepts
Interpreting, summarising, paraphrasing, classifying, explaining

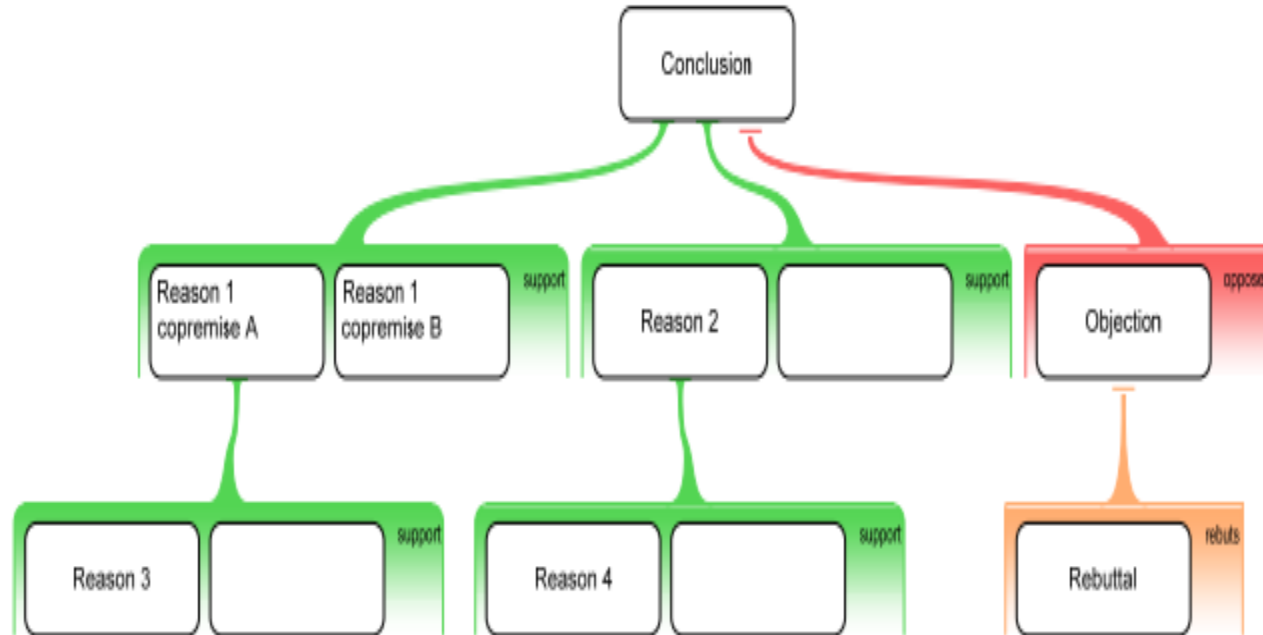
Remembering

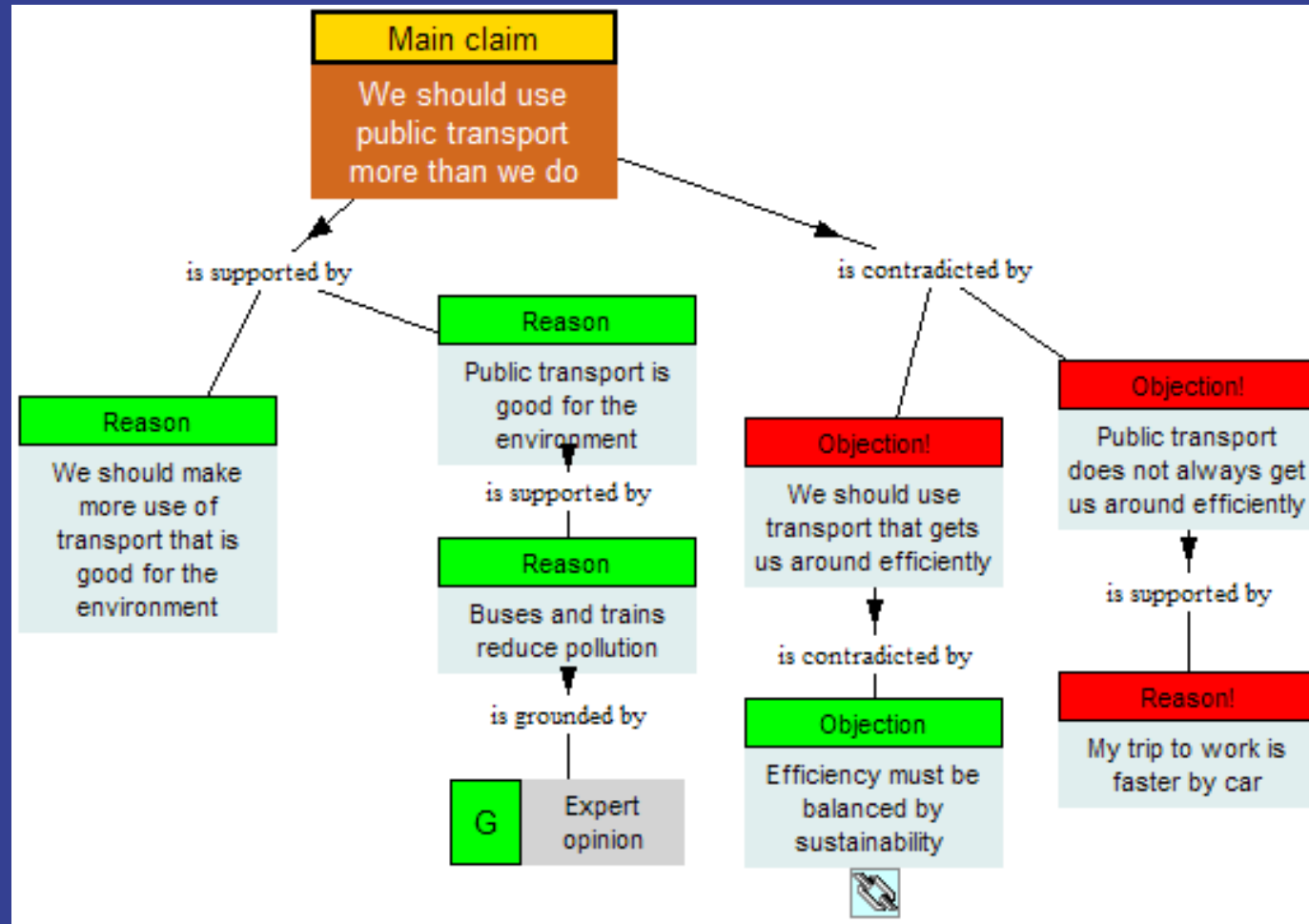
Recalling information
Recognising, listing, describing, retrieving, naming, finding





The Syntax of an Argument Map





<https://www.rationaleonline.com/editor/>

← → ↻ Critical Thinking Skills BV [NL] | <https://www.rationaleonline.com/editor/>

Home Evaluate View Output

File Delete All Delete Undo Redo Trim Auto Hyperlink Insert Image Font Size Cut Copy Paste Copy Repeat Stamp Colour Type

Start Edit Edit Box Clipboard Image Change Box

Building Panel

Grouping Reasoning Advanced Reasoning Basis Boxes

Basis Assertion Case Study By Definition Common Belief Data Example Law Personal Experience Media Publication Quote Statistic Web

Females are better drivers than males

Females are more careful

Females are less likely to text while driving

Females are more likely to follow traffic rules

Females avoid risk taking behavior

Females text more

Common Belief The claim is widely believed.

Common Belief The claim is widely believed.

Flowcharts/algorithms/ organizational charts

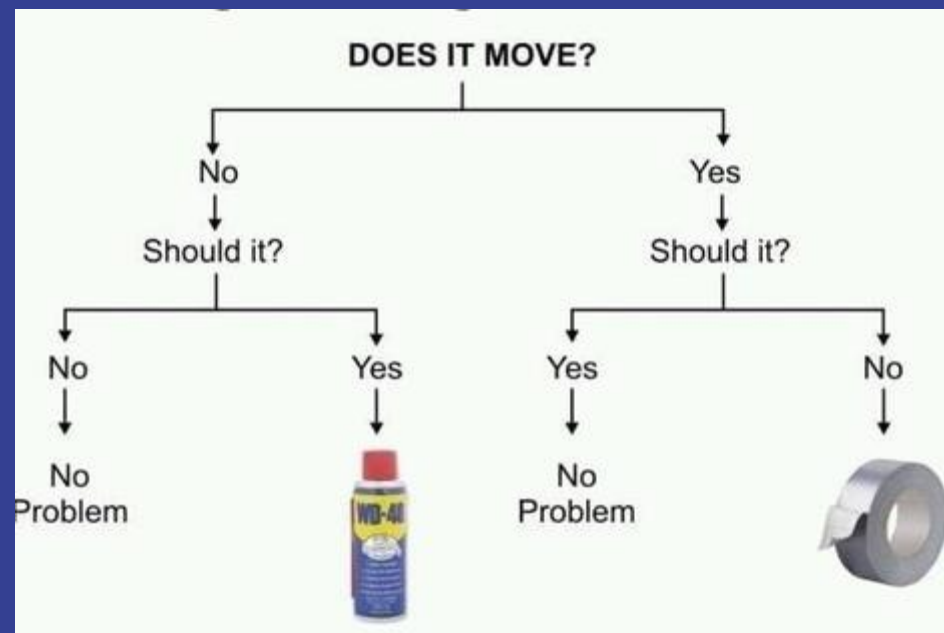


FLOWCHART

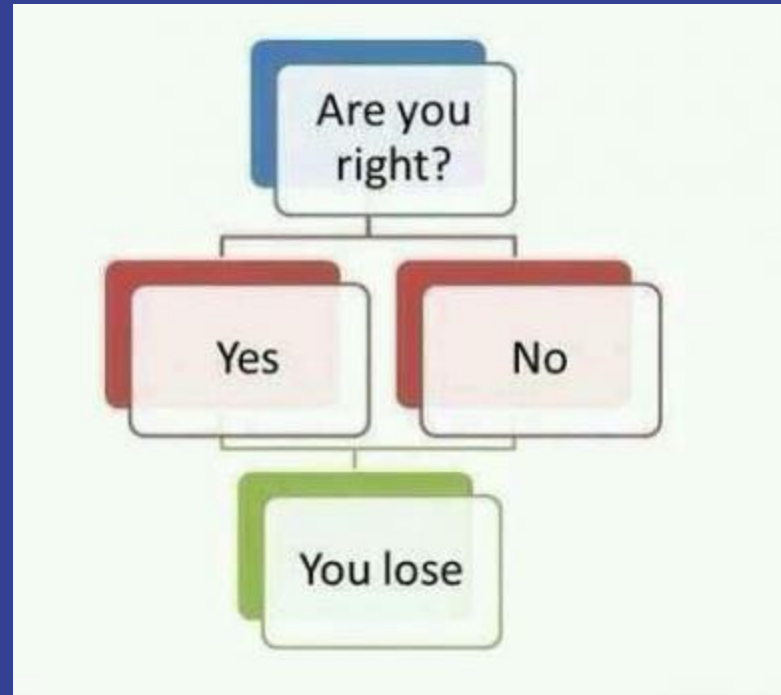
- Usually for processes or protocols
- Step by step, diagram of how a process takes place or how it should take place.



How husbands repair stuff



How to argue with your wife



Organizational /hierarchy charts



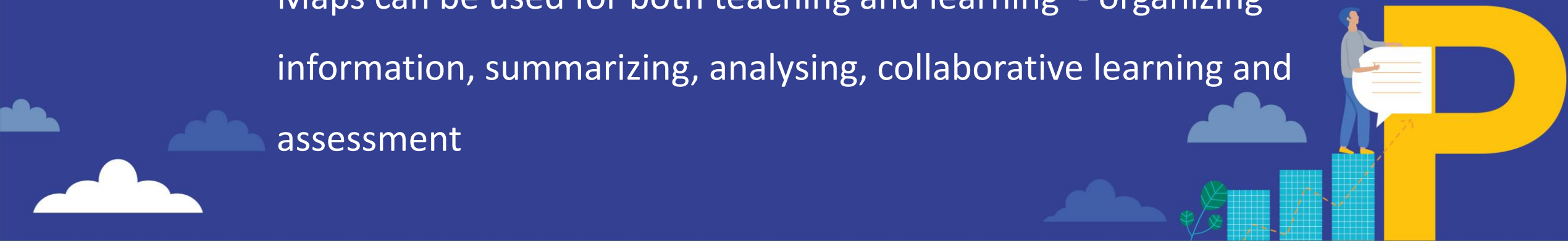
The future

- 3 D/collaborative concept/mind maps
- <https://www.thortspace.com>



TAKE HOME MESSAGES

- There is strong theoretical background and evidence for the effectiveness of mapping in education in general and PBL
- There are different kind of maps- concept- maps, mind-maps, argument maps, flow charts and combinations
- Maps are very personal-The only rule is 'there are no rules'
- Maps can be used for both teaching and learning - organizing information, summarizing, analysing, collaborative learning and assessment



QUESTIONS??



Thank you

