

TOPOLOGICAL TAXONOMY FOR CONCEPT MAPS

Conéctate al Conocimiento
Panamá 2006

The present topological taxonomy has been developed to classify concept maps **by structure**, not content. It has 7 levels (0 through 6), and takes into account 5 basic criteria:

a. Recognition and use of individual concepts

This criterion is concerned with the way concepts are represented within a concept map. In particular, the learner must distinguish and use individual concepts as opposed pieces of text, sentences or other grammatical structures.

- TEXT: *“The escapement passes energy to the pendulum to keep it swinging and also releases the gear train in a step-by-step manner.”*
- INDIVIDUAL CONCEPTS: *“Escapement”, “Energy”, “Pendulum”, and “Gear train”.*

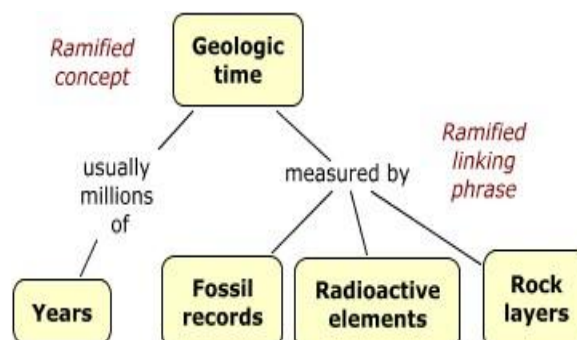
b. Presence of linking phrases

- Learner uses symbols to establish the relationship between concepts.
- Symbols may be words, letters, numbers, images, or any other intentionally placed symbol that depicts the relationship between the concepts.
- Correctness or logical sense of the resulting triads is not considered.

c. Degree of ramification

- Refers to the total number of branch points, that is, the points at which a concept map ramifies.
- Ramification points may occur at concepts or at linking phrases.
- The number of branches at a given ramification point is not considered.

Example: Concept map with 2 ramification points.



d. Hierarchical depth

- Refers to the greatest number of linking phrases between the root concept and any given concept.
- Maps are considered “shallow” if depth is less than 3.
- Maps are considered “deep” if depth is 3 or more.

e. Presence of crosslinks

- Number of crosslinks present in the concept map is observed.
- A proposition is considered a *crosslink* if it joins two concepts, neither of which is the root concept, in such a way that a closed circuit is formed.

Rules for applying the topological taxonomy

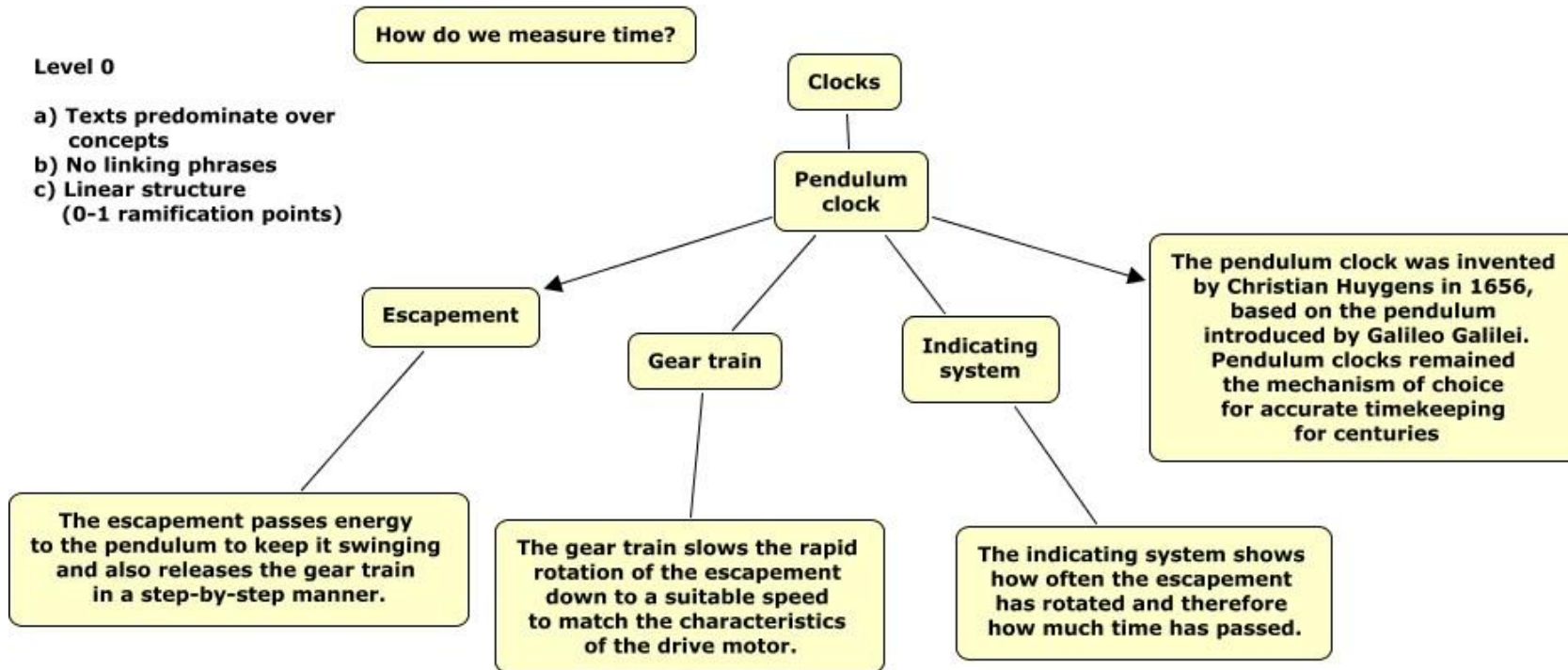
- To belong to a given topological level, a concept map must satisfy **all conditions describing that level**.
- A concept map that does not satisfy **one or more conditions** of a given level belongs to some lower level.

Note: It may happen that a map classified at a given level contains elements or satisfies conditions of higher levels. However, if it does not comply entirely with the requirements of that higher level, it does not belong there.

How do we measure time?

Level 0

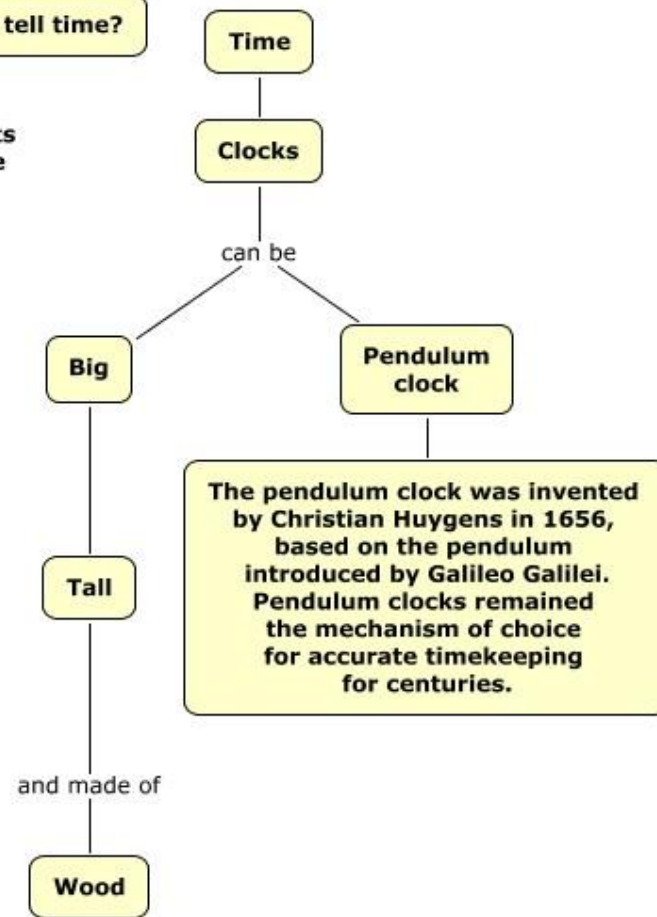
- a) Texts predominate over concepts
- b) No linking phrases
- c) Linear structure (0-1 ramification points)



How do we tell time?

Level 1

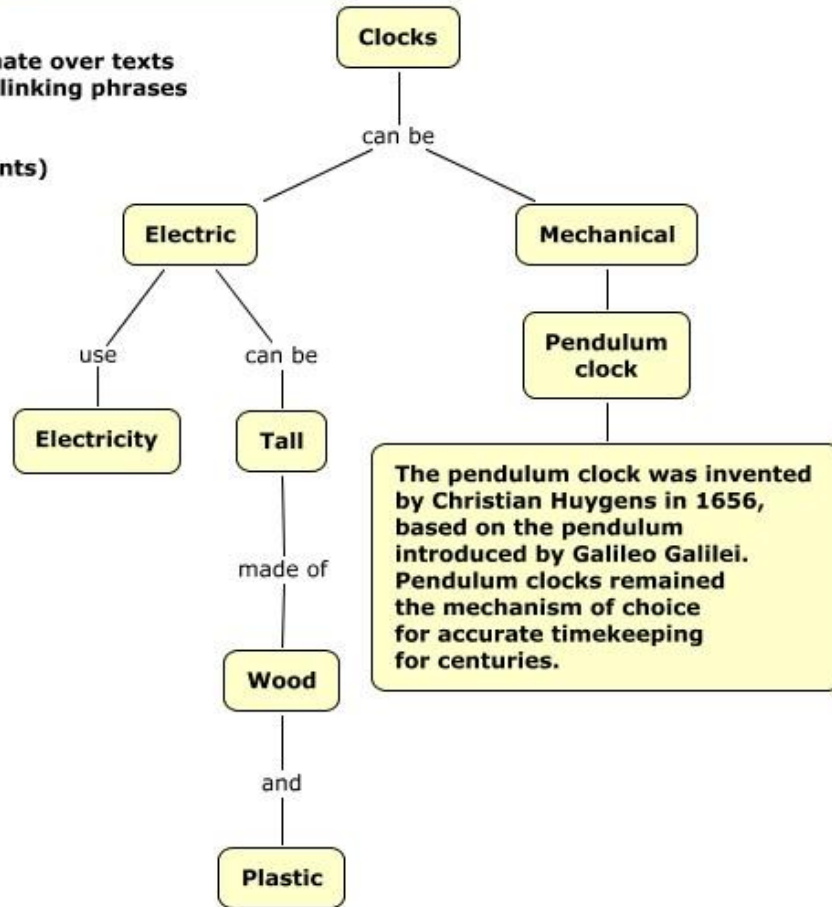
- a) Concepts predominate over texts
- b) Half or more linking phrases are missing
- c) Linear structure (0-1 ramification points)



How do we measure time?

Level 2

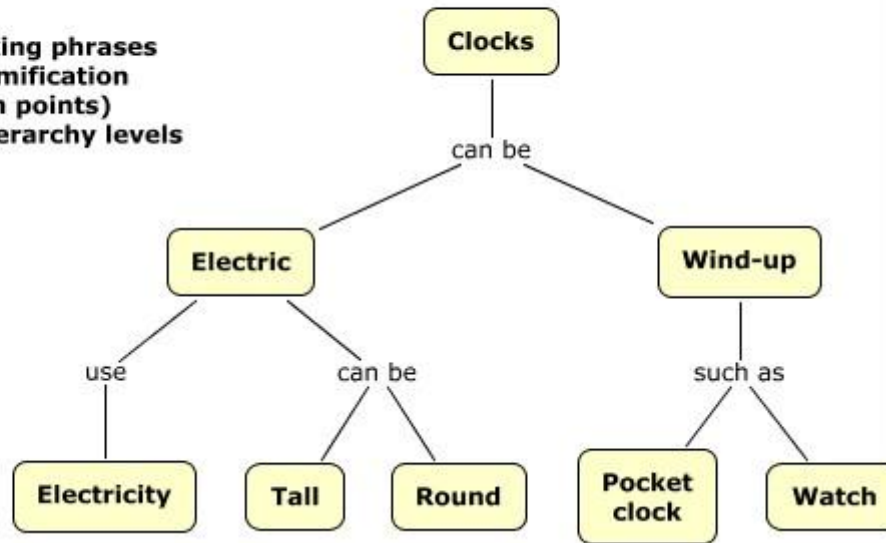
- a) Concepts predominate over texts
- b) Fewer than half of linking phrases are missing
- c) Low ramification (2 ramification points)



How do we measure time?

Level 3

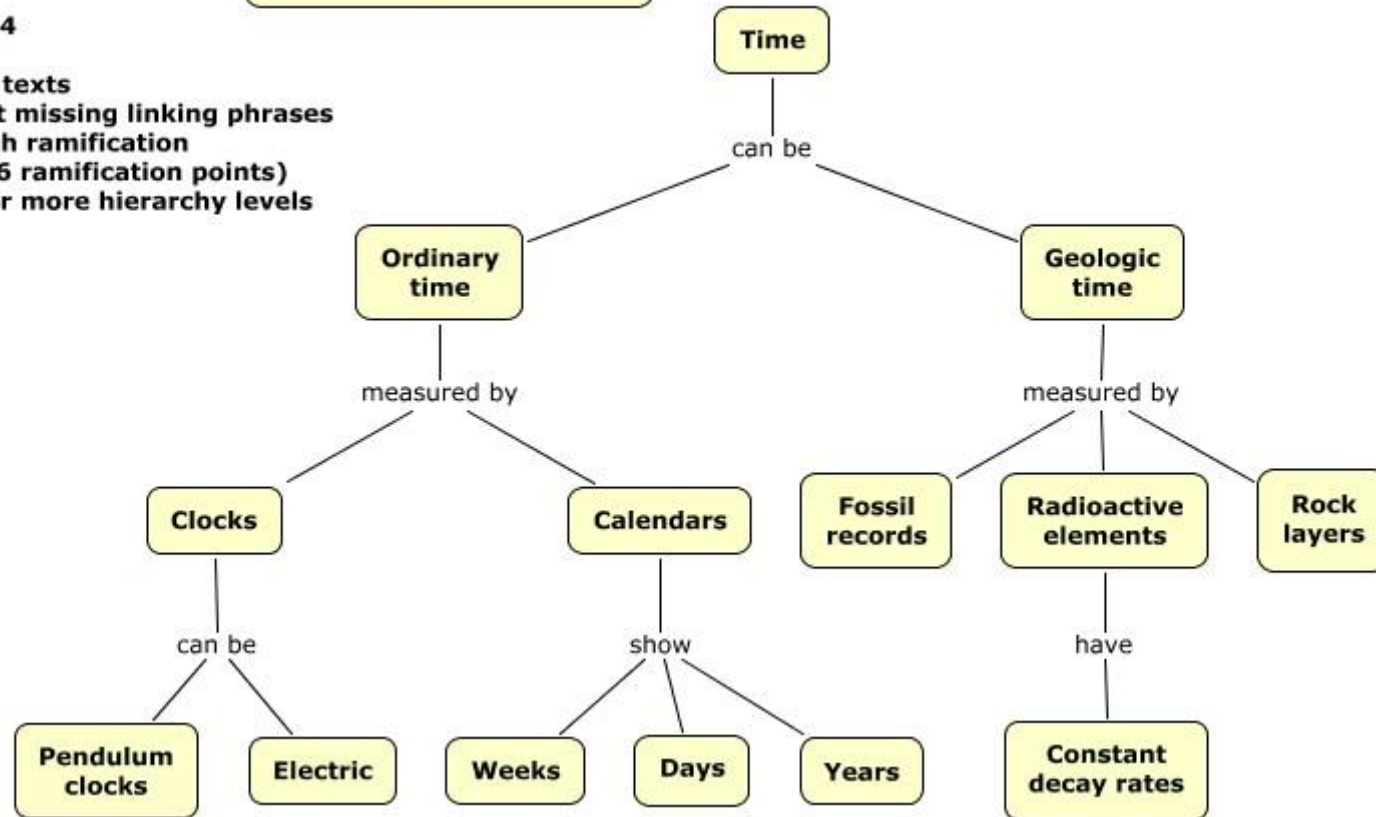
- a) No texts
- b) Not missing linking phrases
- c) Intermediate ramification
(3-4 ramification points)
- d) Fewer than 3 hierarchy levels



How do we measure time?

Level 4

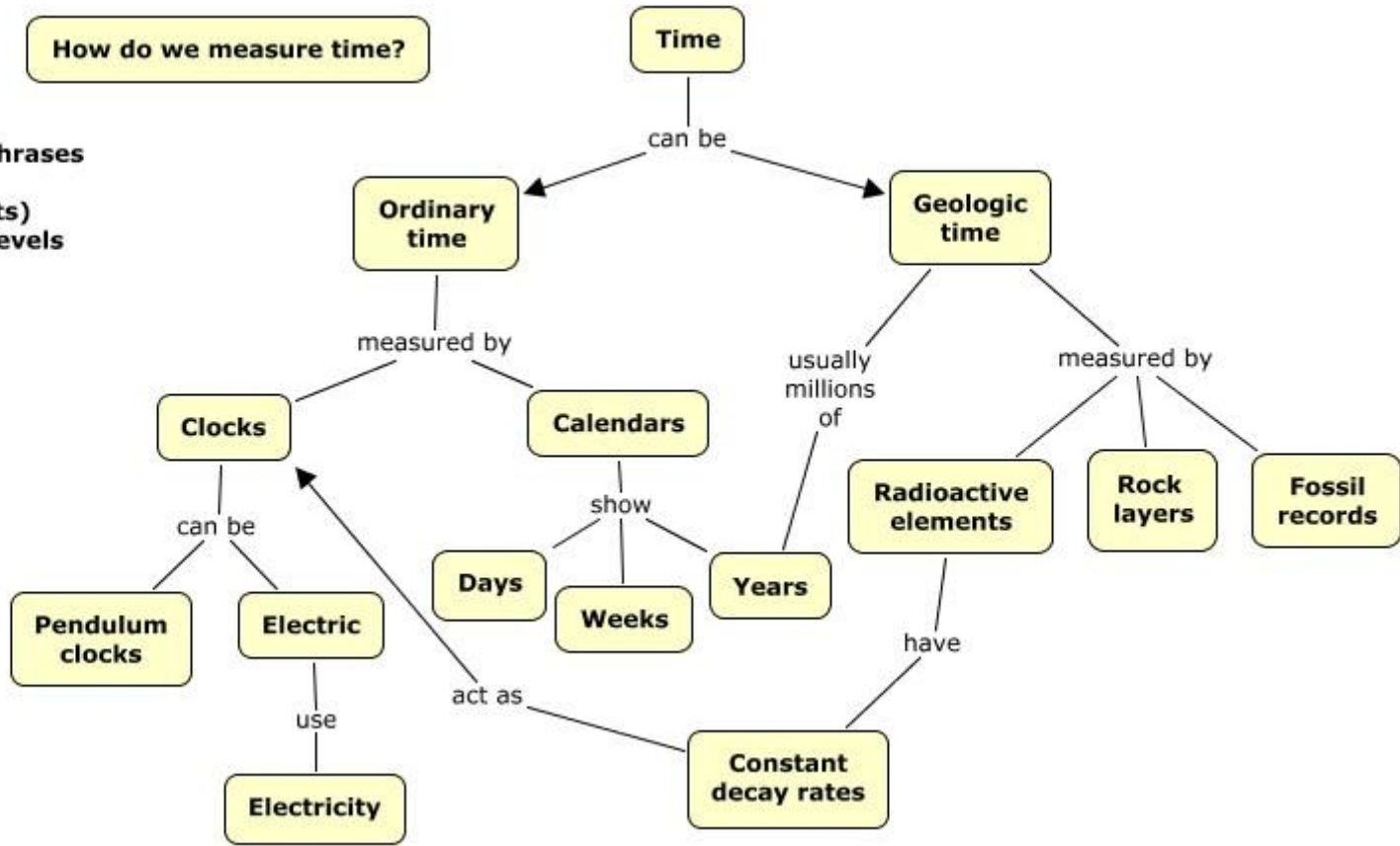
- a) No texts
- b) Not missing linking phrases
- c) High ramification
(5-6 ramification points)
- d) 3 or more hierarchy levels



How do we measure time?

Level 5

- a) No texts
- b) Not missing linking phrases
- c) High ramification
(5-6 ramification points)
- d) 3 or more hierarchy levels
- e) 1-2 cross-links



How do we measure time?

Level 6

- a) No texts
- b) Not missing linking phrases
- c) Very high ramification (7 or more ramification points)
- d) 3 or more hierarchy levels
- e) More than 2 cross-links

