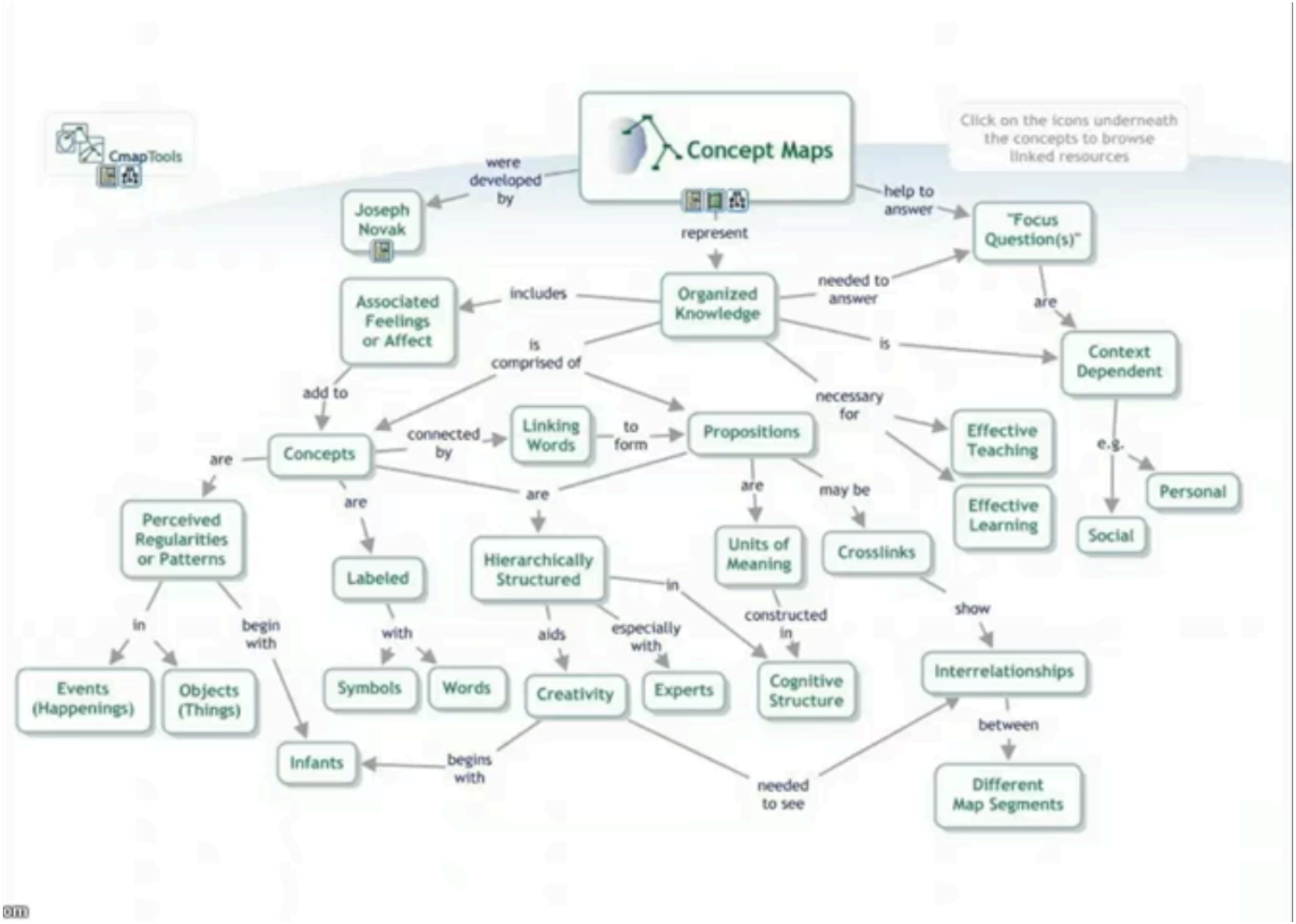
CmapTools
Concept Maps
Click on the icons underneath the concepts to browse linked resources
were developed by
Joseph Novak
represent
help to answer
"Focus Question(s)"
Associated Feelings or Affect
includes
Organized Knowledge
needed to answer
are
is
Context Dependent
is comprised of
add to
necessary for
Effective Teaching
Effective Learning
e.g.
Personal
Social
Concepts
connected by
Linking Words
to form
Propositions
are
Perceived Regularities or Patterns
Labeled
Hierarchically Structured
Units of Meaning
may be
Crosslinks
in
begin with
with
aids
especially with
constructed in
show
Events (Happenings)
Objects (Things)
Symbols
Words
Creativity
Experts
Cognitive Structure
Interrelationships
between
Infants
begins with
needed to see
Different Map Segments

Creating a Concept Map

- Identify the Central Question or Topic
- Generate Concepts (consider the "W" questions: who, what, why, how, when, where, etc.)
- Organize Concepts
  - ✓Examples
  - ✓Definitions
  - ✓Functions
  - ✓Properties
  - ✓Roles
  - ✓Results
  - ✓Processes

Creating a Concept Map

- Put concepts that don't fit into the map into a "parking lot" to re-consider later
- Link concepts together with lines explaining interaction/relationship between the concepts
- Reorganize as needed throughout the process

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Let's Create Concept Maps

- Question: Why is it colder in the winter than in the summer?
- Key Concept: Seasons

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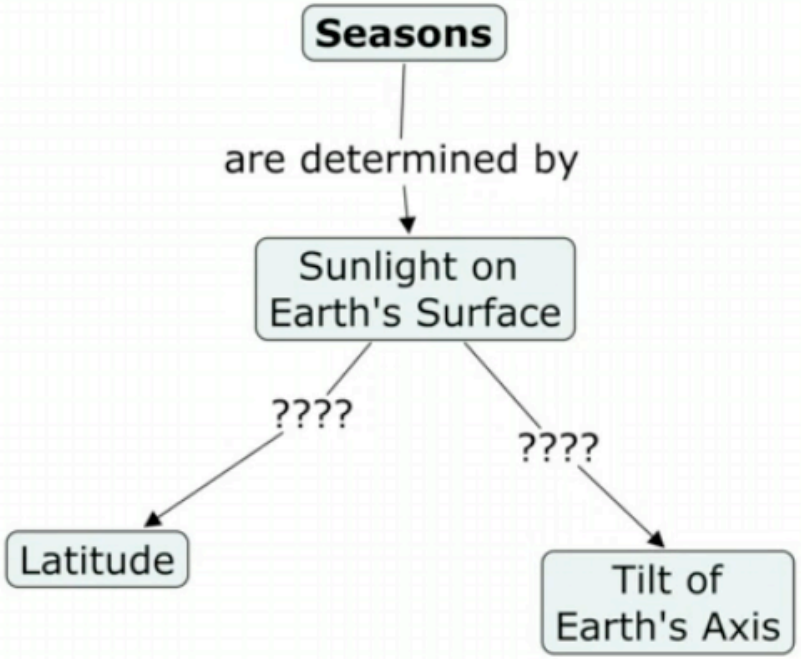
"Skeleton Map" example

Why is it colder in the winter than in the summer?



Height of Sun Above Horizon

Temperature Variations

Winter

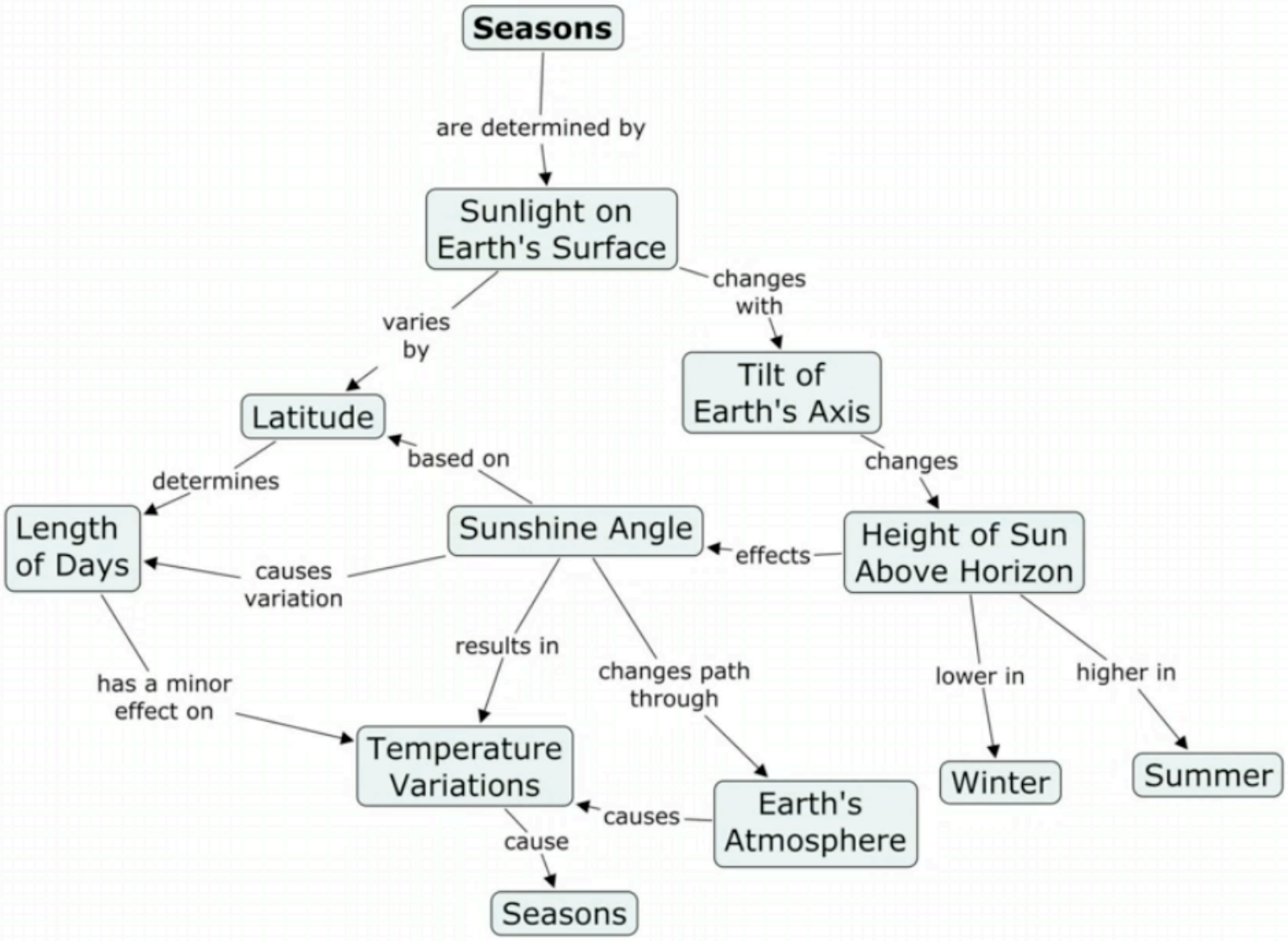
Summer

Length of Days

Sunshine Angle

Earth Atmosphere

Why is it colder in the winter than in the summer?



Links

- Links represent relationships between concepts
- Keep them short (a few words)
- Concepts and their links should form a sentence (e.g., "_____ is a subset of ___" or " ____ results in _____")
- Possible relationships: defined as, opposite of, discovered by, can be divided into, is greater than, caused by, etc.

Central Question

- Create a focus question that clearly specifies the issue addressed by the concept map
- Simple maps are based on objects and are descriptive (e.g., "What is water?")
- Maps dealing with events or processes generate more elaborate representations (e.g., "How does water change from a solid to a liquid?")

Software and References for Concept Mapping

- Free: Cmap Tools http://cmap.ihmc.us/download/
- For Purchase: Inspiration, MindManager

- Canas & Novak (2006) *Re-examining the foundations for effective use of concept maps*
- Nesbit & Adesope (2006) *Learning With Concept and Knowledge Maps: A Meta-Analysis*
- Maas & Leauby (2005) *Concept mapping—exploring its value as a meaningful learning tool in accounting education*
- Edmondson (2005) *Assessing science understanding through concept maps*