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Educating tomorrow's professionals

Visual Tools as a learning and teaching strategy within healthcare education

Nichola Barlow, Caroline Barker and Rob Burton

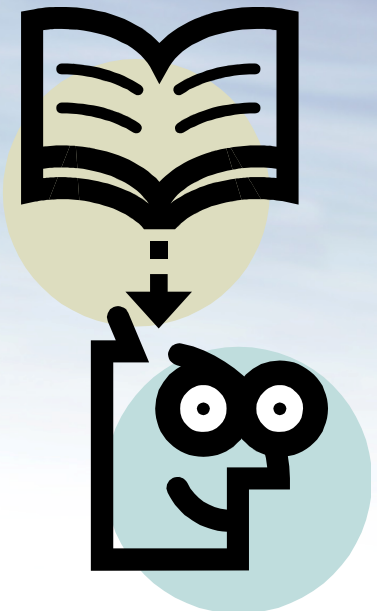
University of HUDDERSFIELD

What are Visual Tools?

- Mind maps, Learning maps, Thinking maps, Concept maps and Diagrammatic representations.
- Powerful retention aids which increase understanding (Harris and Caviglioli, 2003).
- Ideas and thought processes can be made visible through visual tools (Margulies and Valenza, 2005).

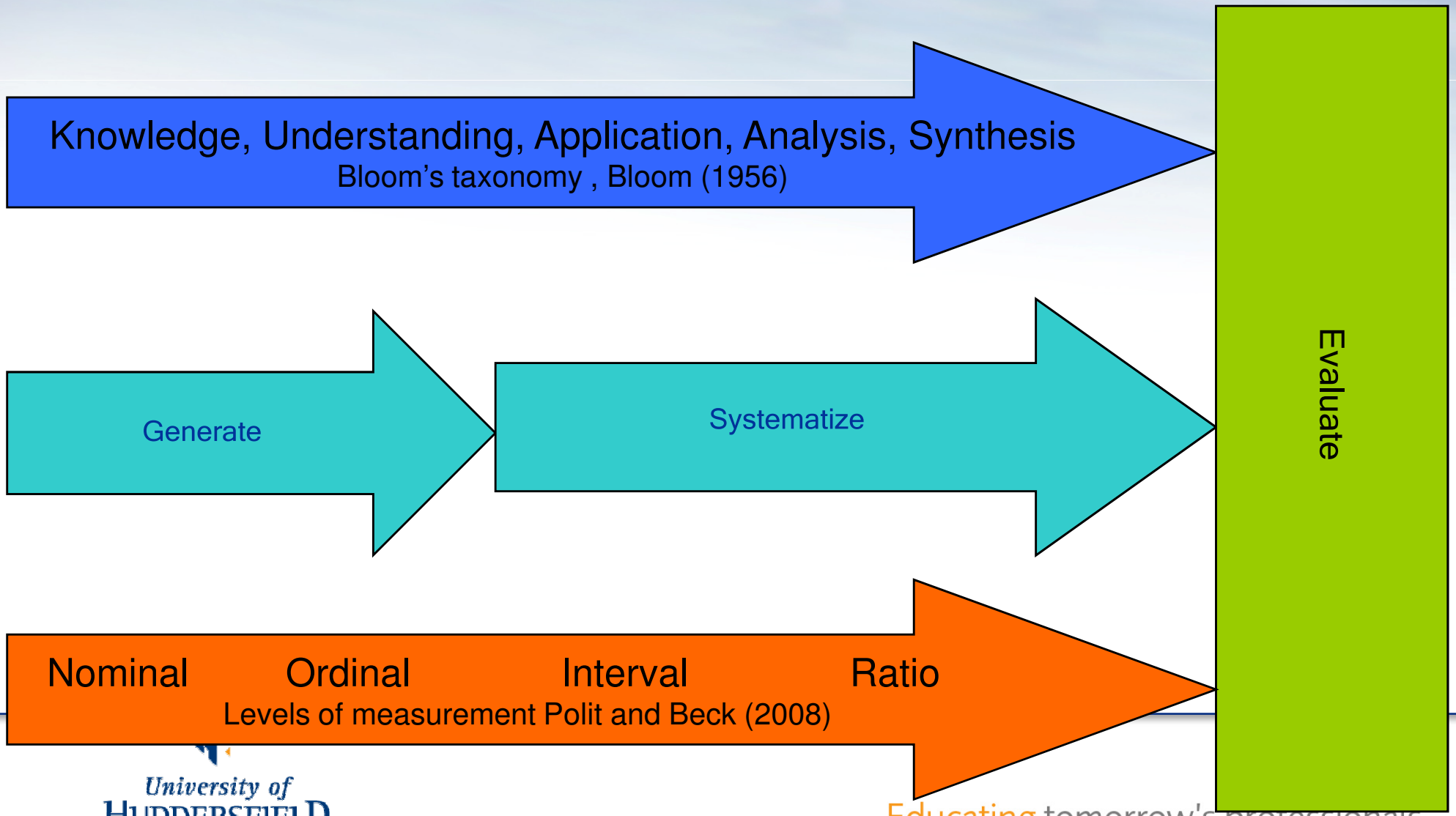
Visual Learning

- 80-90% of information absorbed by the brain is visual in nature Jensen (2000).
- Understanding and insight appears to be heavily dependent on creating images (Garnett, 2005).
- Visual tools transform the normally invisible, abstract act of thought into a concrete and public media (Caviglioli and Harris, 2002).



Creating Diagrams

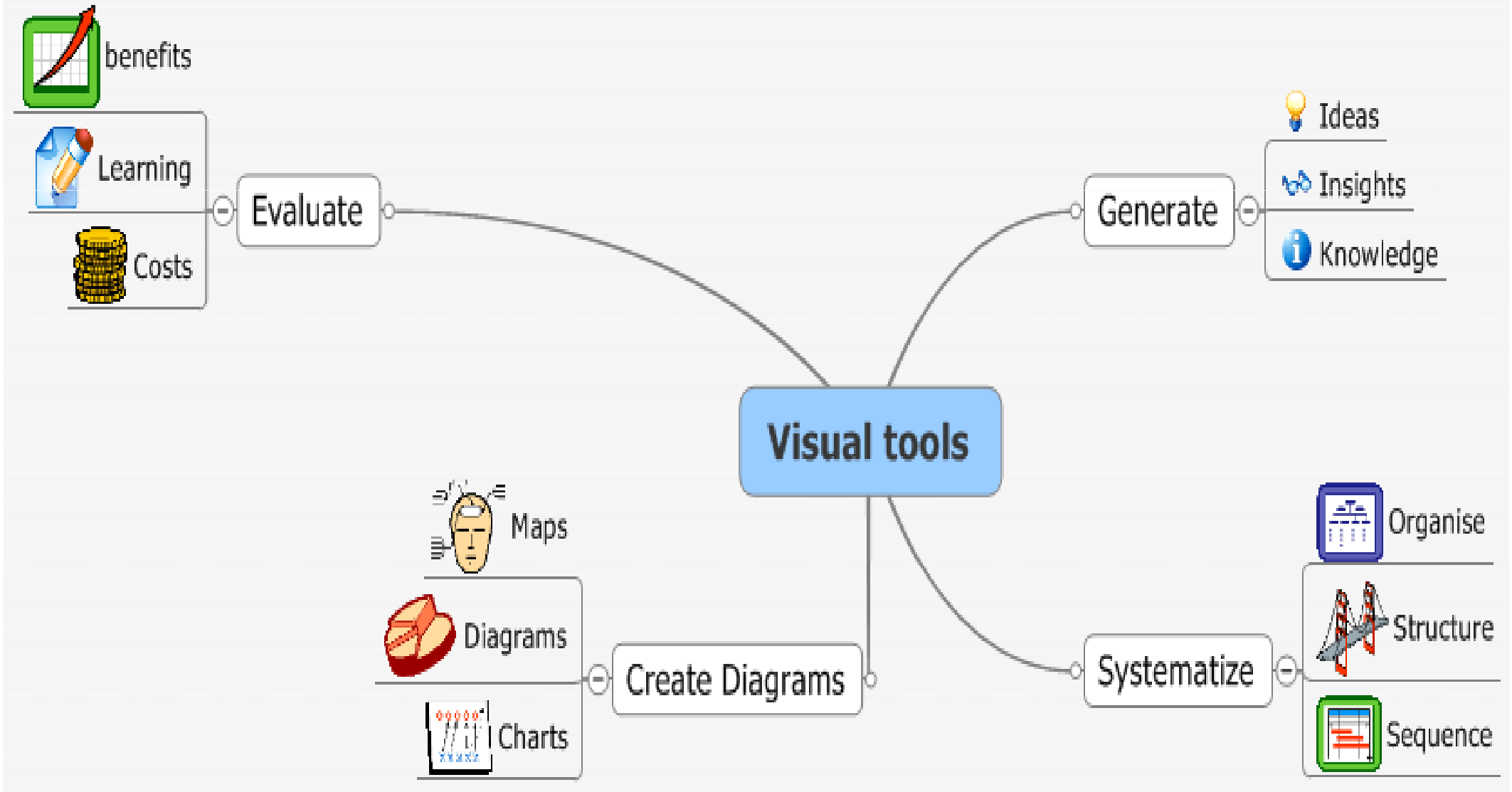
A wide variety of diagrams can be created throughout the various key stages of the learning process and they may be used to represent the level of learning.



Blooms Taxonomy 1956

Knowledge	Simple knowledge of facts, terms, theories, etc.
Comprehension	An understanding of the meaning of knowledge.
Application	The ability to apply this knowledge and comprehension in new and concrete situations.
Analysis	The ability to break down material into its constituent parts and to see relationships between them.
Synthesis	The ability to re-assemble these parts into a new and meaningful relationship, thus forming a new whole.
Evaluation	The ability to judge the value of material using explicit and coherent criteria, either of one's own devising or derived from the work of others.

Visual tools

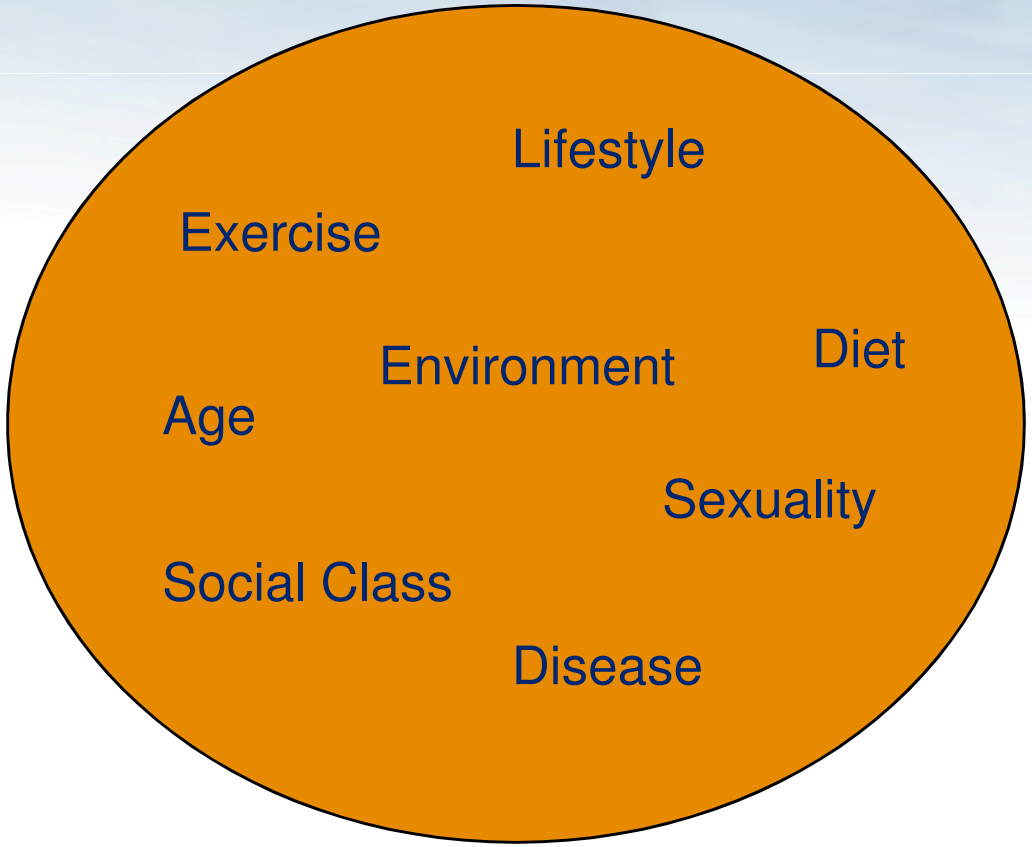


Generate

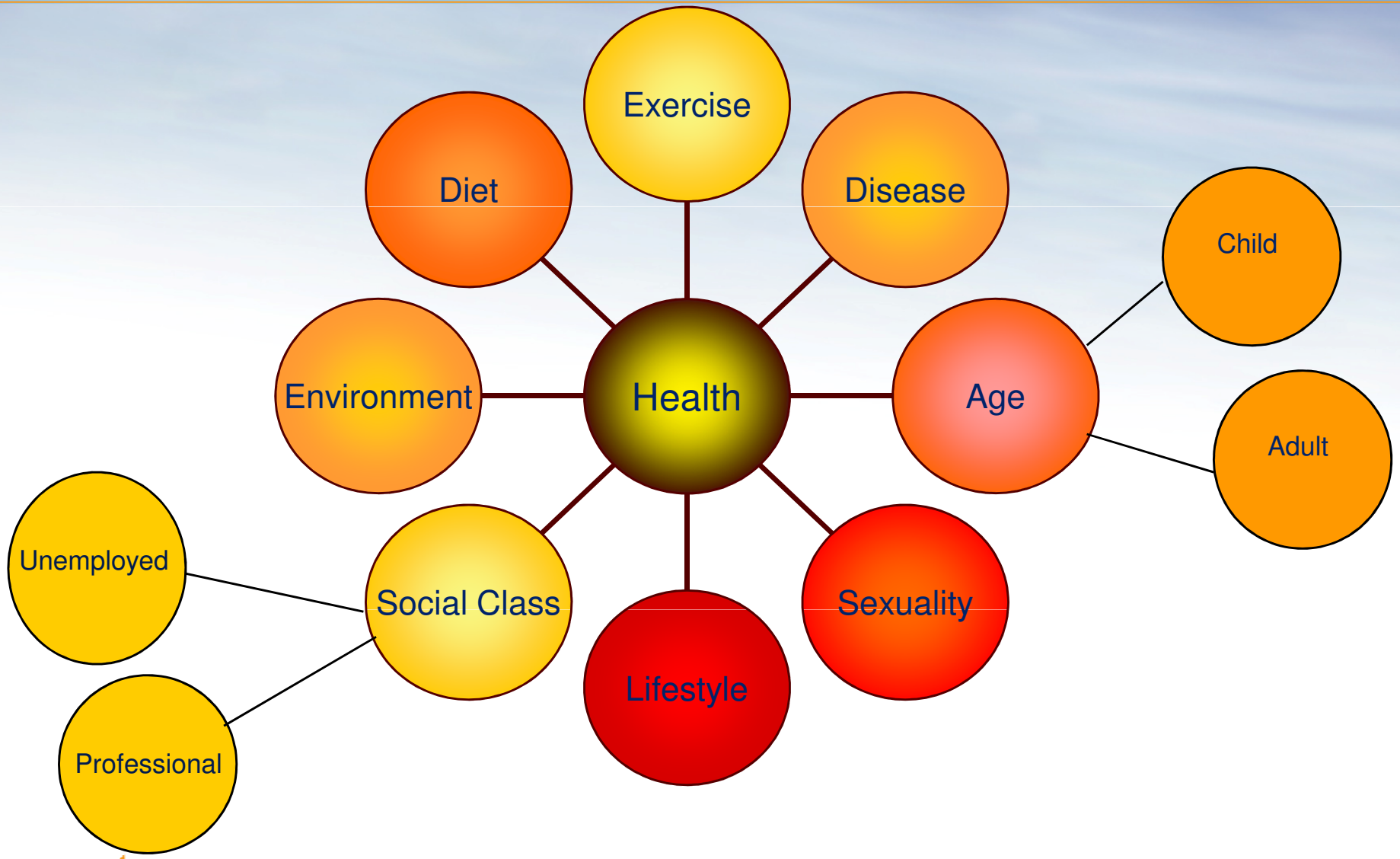
- Develops basic descriptions of the characteristics or components of a concept.
- Identifies all the characteristics of the concept, process or phenomena under discussion.
- This stage is sometimes known as ‘ideas generation’, ‘brainstorming’ or ‘thought showers’.

Tools used to Generate Information

This circle is an example of Generation in relation to the subject of Health



Generate


Exercise
Diet
Disease
Child
Environment
Health
Age
Adult
Unemployed
Social Class
Sexuality
Lifestyle
Professional

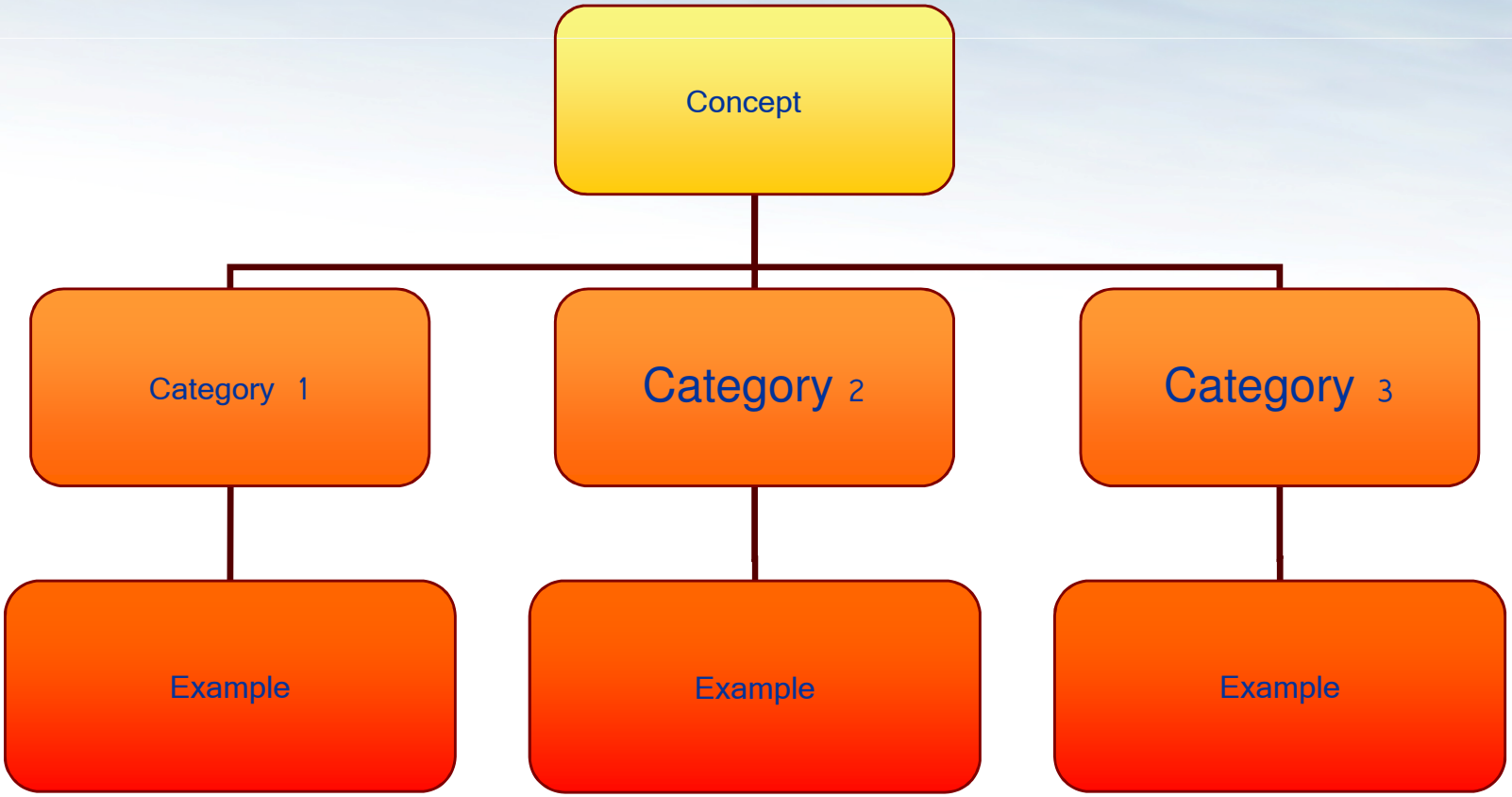
Systematize

- This stage follows the ‘Generate’ stage and involves some order being introduced to the visual tool.
- The diagram is developed a stage further to represent groups and subgroups, providing structure and hierarchy.
- Links between groups and subgroups are used to represent the relationships between the concept and their component parts

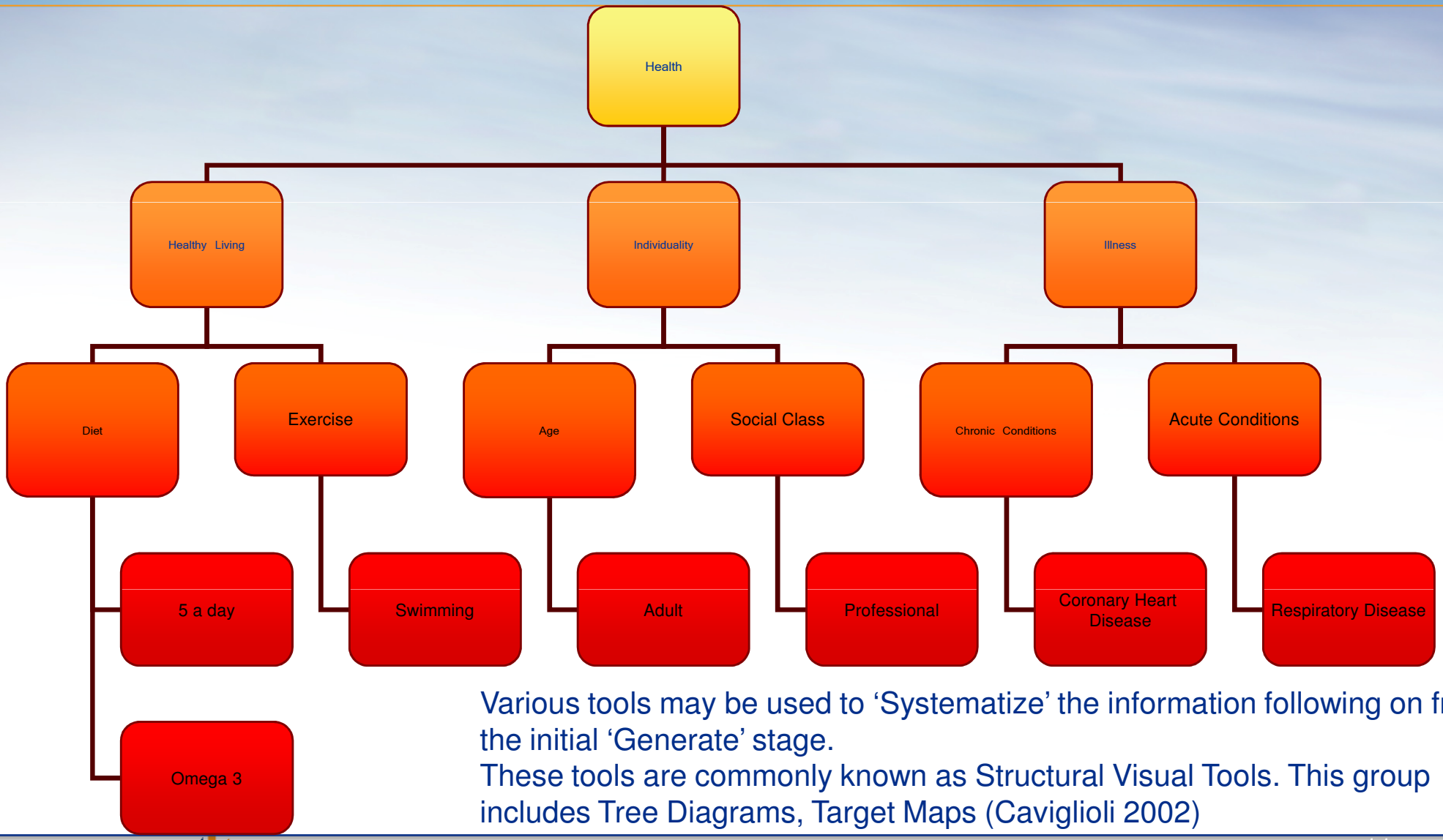
  (Heinze-Fry and Novak, 1990).

Tools used to systematize information

Various tools may be used to 'Systematize' the information following on from the initial 'Generate' stage. These tools are commonly known as Structural Visual Tools. This group includes Tree Diagrams, Target Maps (Caviglioli 2002)



Tree Diagram

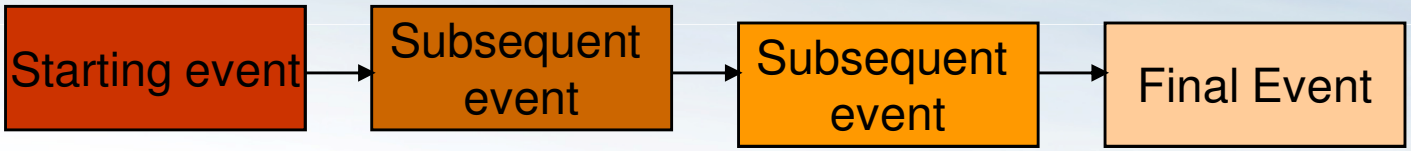


Various tools may be used to 'Systematize' the information following on from the initial 'Generate' stage.
These tools are commonly known as Structural Visual Tools. This group includes Tree Diagrams, Target Maps (Caviglioli 2002)

Systematize by time

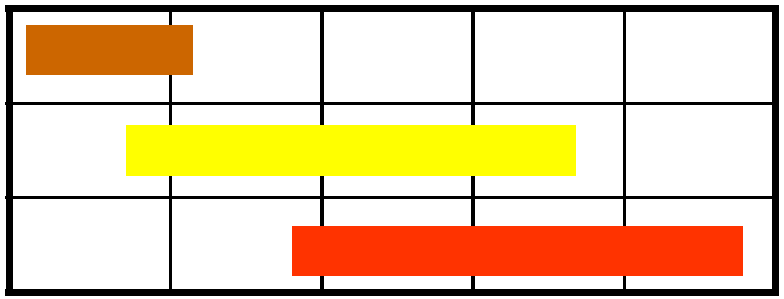
Flow diagram

The use of arrows to demonstrate the sequence of a particular process.



Gantt Chart

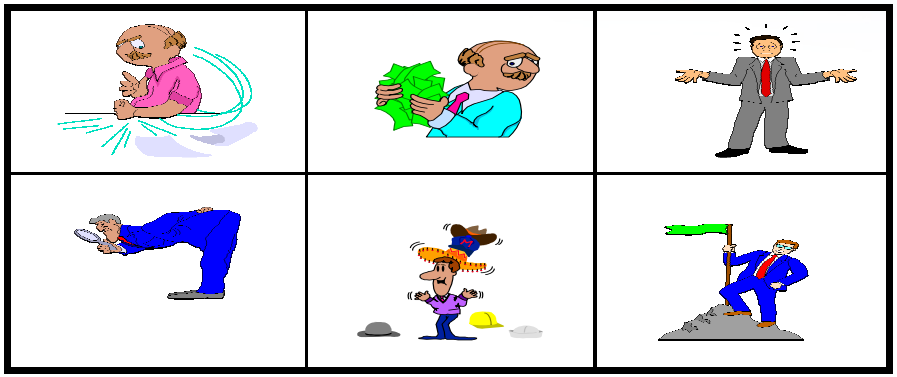
- Represents the sequence and where aspects occur simultaneously.
- Often used in the work place for project planning.



Systematize by time

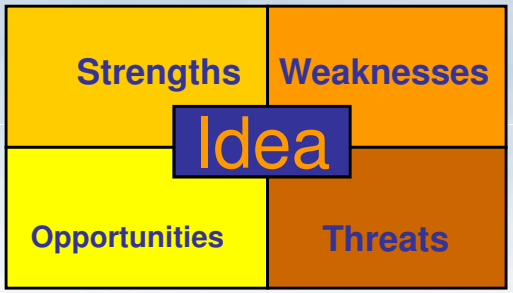
- ***Time lines*** *are used to demonstrate the sequence and timing of events*

- ***Picture/story boards*** *show not only the sequence of events but may also provide detail.*

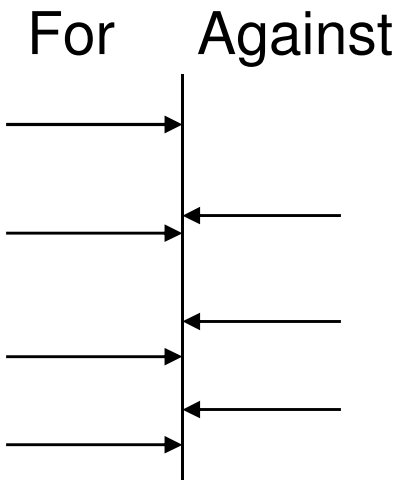


Systematize
Compare & Contrast

- *SWOT analysis*
  - Strengths, Weaknesses, Opportunities and Threats.

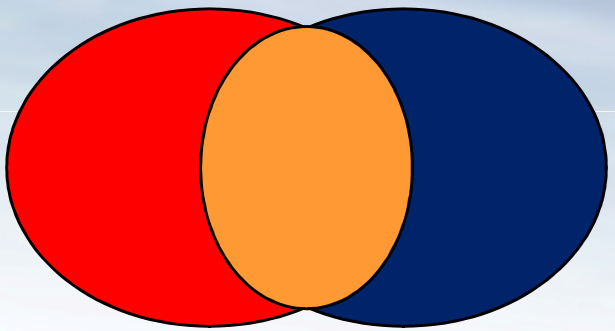


- *Force field analysis*
  - Represents the components which support or oppose the concept.

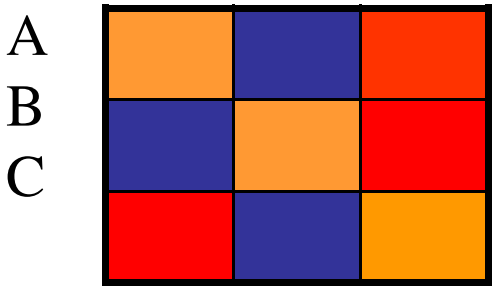


Systematize
Compare & Contrast

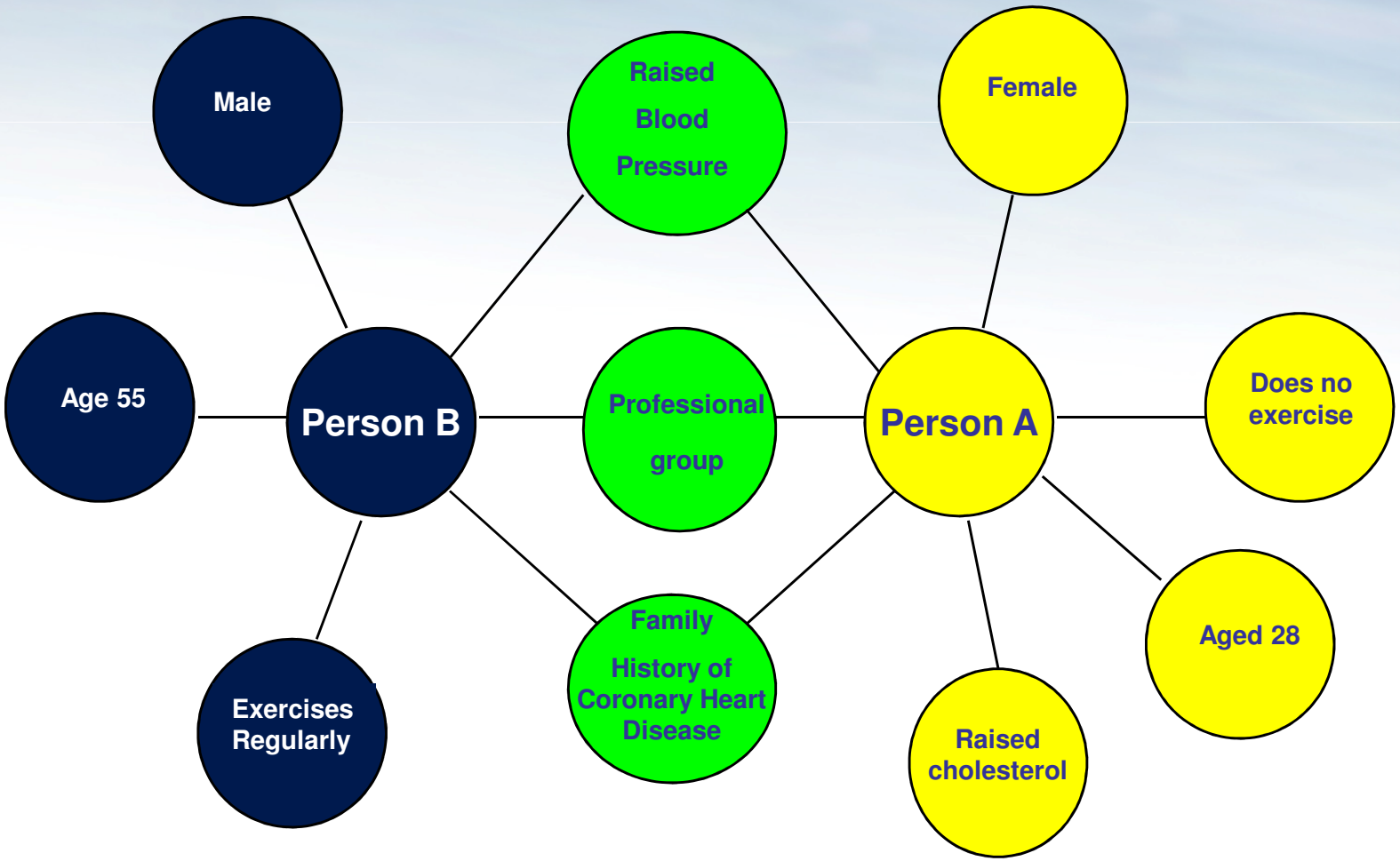
- *Venn-diagram*
  - Illustrates shared and interval components/ characteristics



- *Affinity diagram.*
  - Table represents all the components of each of the concepts of interest.

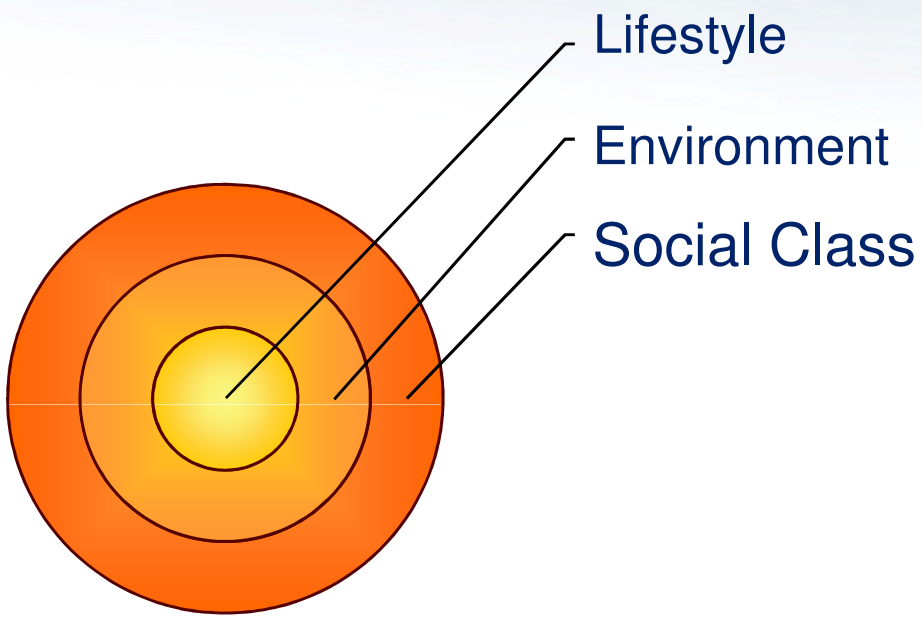


Systematize
Compare & Contrast



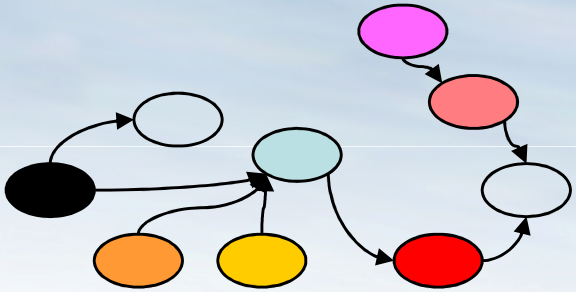
Systematize

Target maps support the prioritising required for decision making. Like any other ranking method 'Target maps' help to identify the characteristics which have the most or least significance to a given concept or problem. The characteristics identified in the centre are regarded to be the most important compared to those away from the centre which are considered of least importance.

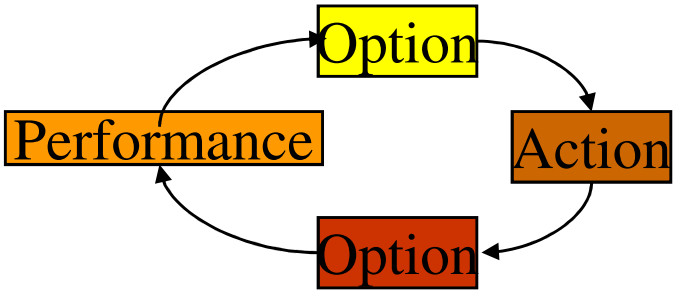


Relations Diagram

- **Relations diagrams** show how components and concepts are structured, how they interact and relate to one another



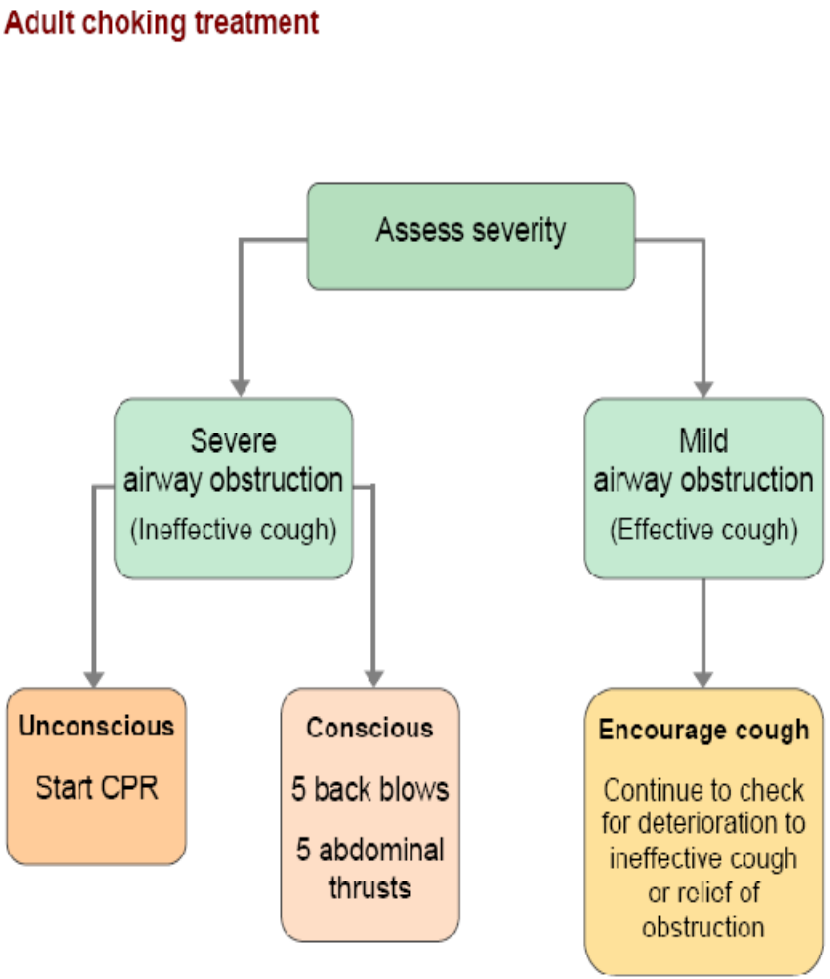
- **Cycle/process diagram**
  These diagrams are used to represent the sequences, stages, occurrences and processes within a concept / situation



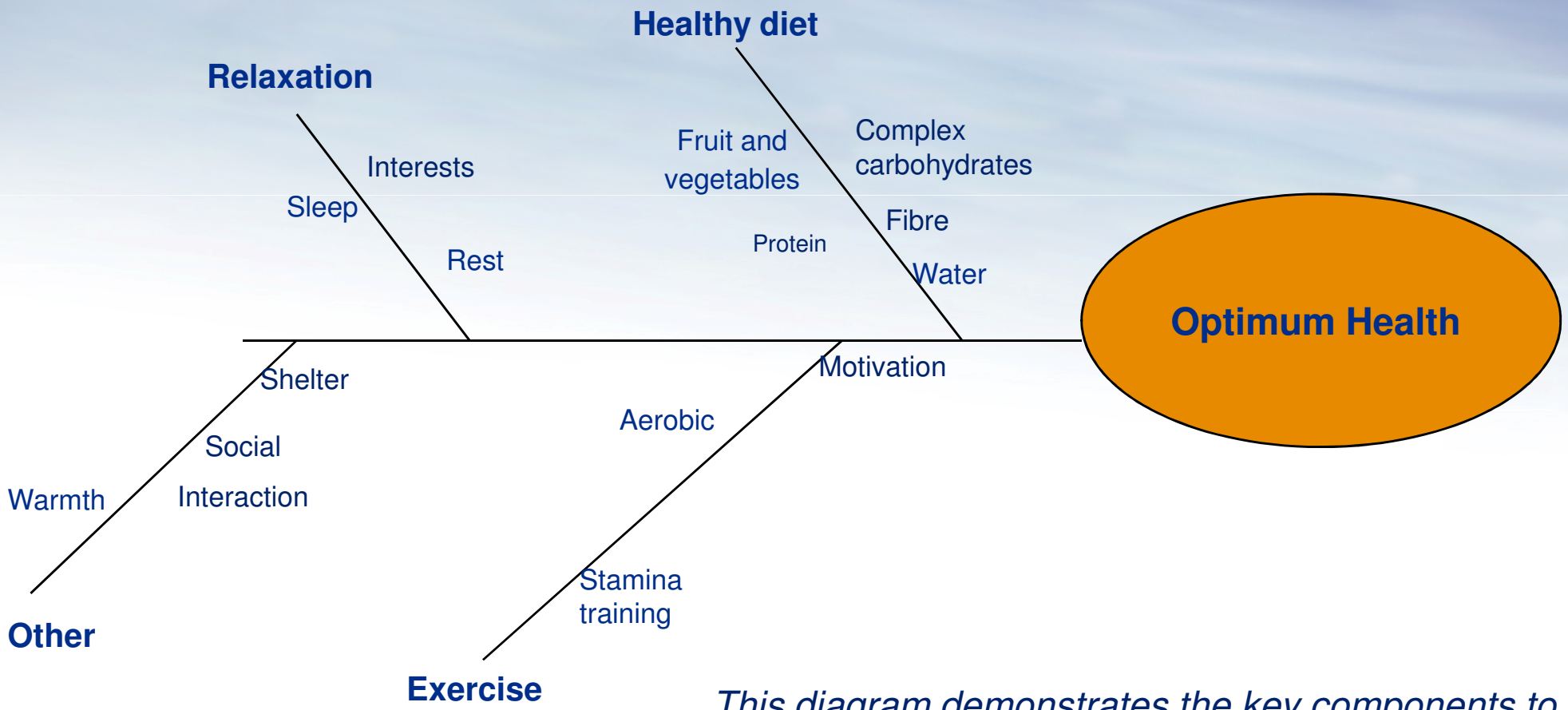
Algorithm

Algorithms are used to represent and support decision making processes.

This example shows how to respond in the case of a choking adult

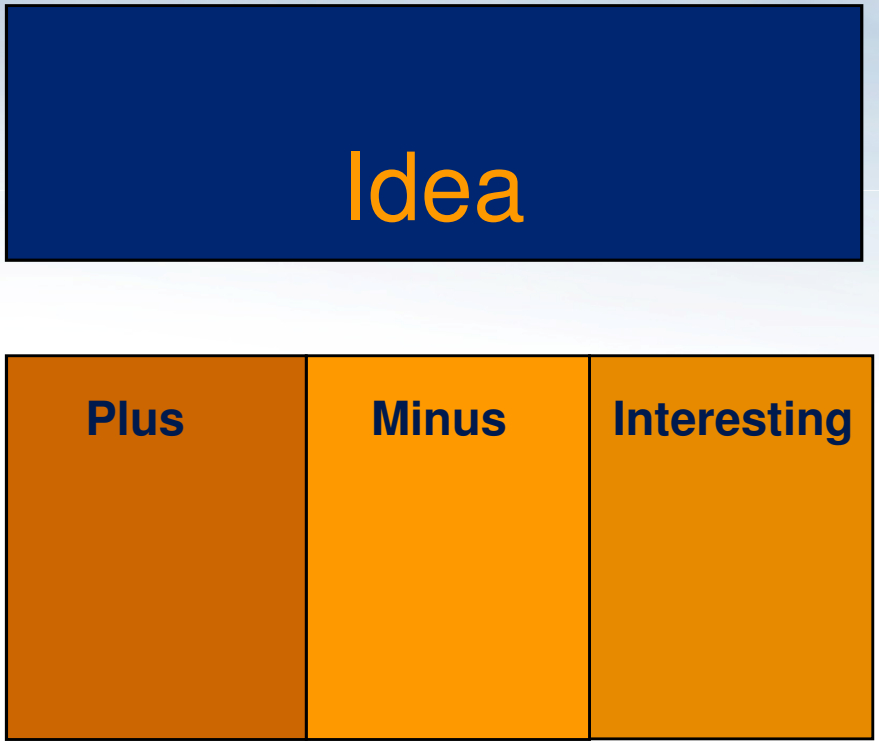


Fishbone/Causal representation



This diagram demonstrates the key components to achieving optimum health. The components closer to the desired outcome have the greatest influence on the outcome.

Evaluating



This visual representation can be used to both consider the advantages and disadvantages of the subject matter.

It also highlights anything new or interesting that has come to light during analysis.

Plus Minus Interesting (PMI) diagram
(De Bono, 1993)

Visual tools in adult learning

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PLUS

- Serves as an educational tool.
- Promotes meaningful learning.
- Meets individual learning styles.
- Supports students with dyslexia.
- Promotes critical thinking.
- Develops problem solving skills.
- Identifies gaps in knowledge.
- Students control their learning.
- Useful for :
  - Planning
  - Revision
  - Teaching strategy
  - Curriculum development
  - Assessment Strategy
    - Portfolio
    - Presentation
    - Posters

MINUS

- Time to become proficient.
- Interpretation can be difficult initially.
- Information technology software - time consuming until user becomes efficient.
- Teacher transition to facilitation of student centred learning.

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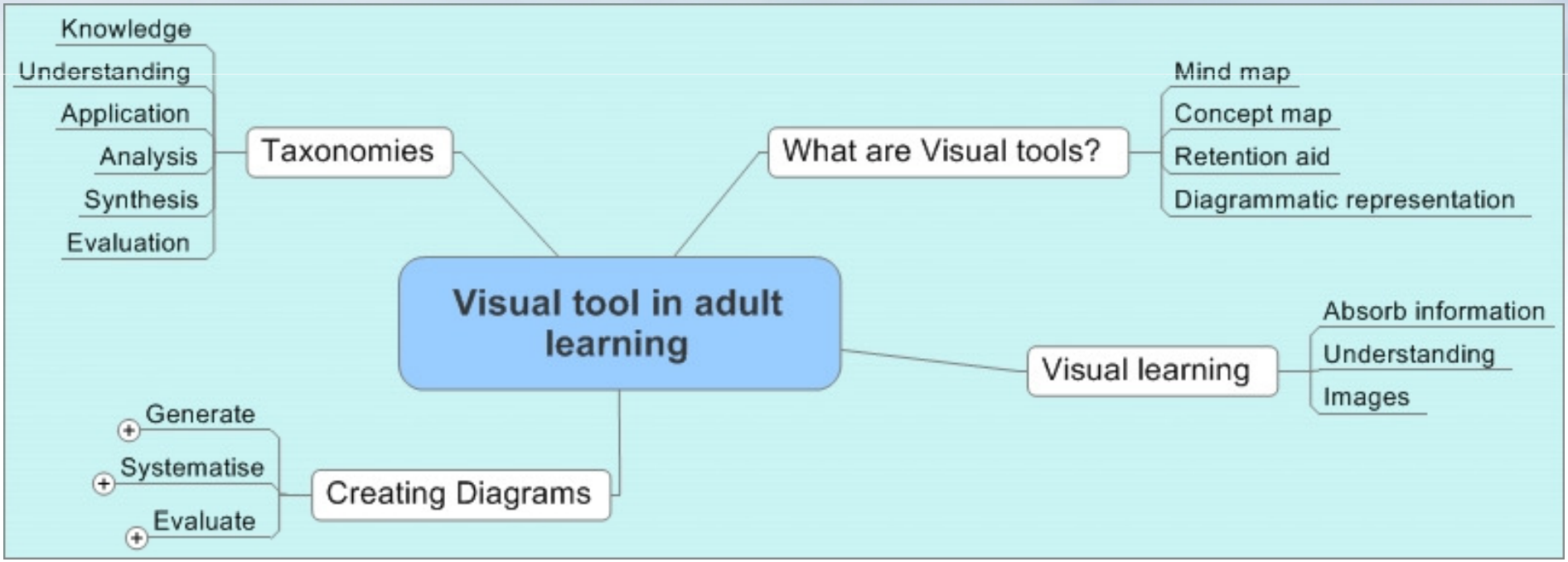
Interesting

- Use in the national curriculum within the UK – implications of this on Higher education.
- Students with some forms of dyslexia have the opportunity to demonstrate their understanding and problem solving skills other than through written narrative (Farmer et al, 2002).

Summary


Visual tool in adult learning
Taxonomies
Knowledge
Understanding
Application
Analysis
Synthesis
Evaluation
What are Visual tools?
Mind map
Concept map
Retention aid
Diagrammatic representation
Visual learning
Absorb information
Understanding
Images
Creating Diagrams
Generate
Systematise
Evaluate

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Any Questions?

Thank you

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