

Information Literacy: Processes for Finding, Presenting and Utilising Business Information

**Topic 3:
Analysing and
Synthesising**



Copyright

© 2011 Australian Graduate School of Leadership

Material drawn from various authors remains their copyright and is reproduced for the sole purpose of reference and study by participants enrolled in this University course and is not to be reproduced or used for any other purpose.

Every effort has been made to comply with copyright law as set out in the Copyright Act 1968 (Cth) and every effort has been made to trace and acknowledge copyright in our sources. We apologise if any infringements have occurred and will address the situation when contacted by the copyright owners.

COMMONWEALTH OF AUSTRALIA

Copyright Regulations 1969

WARNING

This material has been reproduced and communicated to you by or on behalf of The IMIA Centre for Strategic Business Studies pursuant to Part VB of the Copyright Act 1968 (the Act).

The material in this communication may be subject to copyright under the Act. Any further reproduction or communication of this material by you may be the subject of copyright protection under the Act.

Do not remove this notice.

Information Literacy: Processes for Finding, Presenting and Utilising Business Information

Topic 3: Analysing and Synthesising

Contents

INTRODUCTION.....	4
CONCEPTUAL ANALYSIS.....	5
SELECTION OF INFORMATION	5
CONCEPT MATRICES.....	6
CONCEPT MAPS.....	7
<i>Advantages of concept mapping.....</i>	<i>8</i>
<i>Creating concept maps.....</i>	<i>9</i>
ANALYSIS.....	10
SYNTHESIS.....	11
REFERENCES.....	12

Introduction

Topic 3 provides guidance for analysing the concepts and arguments identified in the information sources found through the search processes described in Topic 2. This analysis makes an important contribution to determining how best to use information collected and the position you should take with regard to future action.

Exploration of concepts as they are presented across a number of different sources provides the opportunity for viewing the concept from different perspectives and thereby ensuring that available information and understandings are synthesised into recommended action(s) that have the best possible chance of success.

The aim of reviewing published sources is to learn from the experience and thinking of others, as a springboard for moving ahead. In working through various sources, it is useful to look for:

- Key concepts that the literature appears to be organised around, and that help organise your own thinking
- Themes around which thinking in the area is organised, on which different writers take different positions
- Key propositions that are supported by the literature, and might form your conclusions
- Controversial propositions or issues that are the subject of disagreements in the literature, in relation to which you might finally wish to take a position.
- Critical concepts, distinctions, or propositions that are identified by one or a few contributors, that identify weaknesses or omissions in the general consensus, or suggest a radically new and potentially more useful way of looking at the issues.

Note, in the above there is an implied distinction between concepts, themes and proposition or issues. A theme is effectively a set of related propositions or issues that run through and help to organise an area of discussion. For example,

- Within the broader issue of motivating individual performance in organisations, the role of financial incentives and how these should best be set up would be a theme.
- “Financial incentives” would be a concept, “incentives” would be a more general concept, and “motivation” would be a more general concept still.
- A proposition might be that “individual performance is maximised by making a substantial portion of individual compensation packages contingent of achievement of defined levels of performance”. In this proposition, “performance” and “defined levels of performance” would be other key concepts.
- A controversial proposition in this area might be “Financial incentives are counter-productive because those who are motivated purely by financial outcomes will seek to maximise performance measures, regardless of whether this reflect actual performance, and because it displaces and undermines intrinsic motivation that drives creativity and commitment to achieving real performance outcomes.” This directly

contradicts the previously stated proposition which might be considered the prevailing consensus in the business literature and business practice.

Sources of concepts, themes and propositions can be tracked using formats such as those outlined in Tables 1 and 2, so that particular sources are linked to the concept, proposition or position in relation to an issue or theme. Relationships between different concepts, themes and propositions can be mapped as in Figure 3. Such tables and maps not only assist in organising one's own thinking, they provide a basis for structuring a report on the review, as will be discussed in Topic 4.

Conceptual Analysis

Selection of information

Reading analytically and selecting relevant information is a process that typically progresses from the general to the particular. We skim through the material first to determine which sections are most immediately relevant to our information needs and then go back and look through those sections in more detail.

For example, when reading through a book Hart (1998, p. 54) suggests the following:

- Initially skim through the book, noting its structure, topic, style, general reasoning, data and bibliographical references
- Survey the parts of the book - quickly glancing through each chapter to get a general idea of the structure of the contents of the book as a whole and identify key chapters
- Skim over and then read the preface and introduction, trying to identify the idea, aims and logic for the work
- Read the parts of those chapters that you have identified as being important to your needs...Chapters to look out for are those which provide the rationale for the study, eg chapters summarising theory and method. It is at this stage that you need to extract the main concepts and see how they have been defined and operationalised by the author.

Journal articles can be treated in much the same way:

1. Judge from the author and/or title to determine the potential usefulness of the article
2. Skim through the abstract or executive summary
3. Read the conclusions if the abstract suggested the article to be relevant
4. Read through the theory background (usually in the introduction section)
5. Finally, read through the rest of the article if the previous sections show that appropriate insights can be gathered

Concept matrices

Once you have found information relevant to the issue you are investing, you will need to analyse this material and examine the concepts, arguments, and conclusions drawn by the authors. A systematic and logical approach to this stage will assist in making links between concepts clearer and make it easier for you to find specific information again when looking back through your notes.

A concept matrix is a relatively simple way to organise this type of information (Webster & Watson, 2002). Table 1 shows four different concepts (A, B, C and D) and their distribution across three different articles (1, 2 and 3).

Table 1: Concept matrix

	Concepts			
Article	A	B	C	D
1		x	x	
2	x	x		
3			x	x

Source: Webster and Watson, 2002, p.xvii

The main use of mapping a topic is to acquire sufficient knowledge of the issue/concern to develop the necessary understanding of possible investigative approaches and to undertake an analytical evaluation of the main arguments, concepts, and theories relevant to the issue/concern in order to synthesise from the analysis an approach that will ultimately facilitate the identification of appropriate action.

Feature maps are a method by which the content of many articles can be systematically organised and recorded in a standardised format (Hart, 1998, p. 145), such as that presented in Table 2.

Table 2: Summary record sheet for a feature map

Author/ Date	Theory/ Standpoint	Evidence	Argument	Core Citations Used	Misc.

Source: Hart, 1998, p. 146

You can also use feature maps to isolate and focus on specific aspects in the literature, such as the structure of an argument that different authors have employed (see Table 3).

Table 3: Worksheet for making comparisons between different authors working in the same topic field

	Author/Date	Author/Date	Author/Date
(Key concept)			
Characterisation/ description			
Antecedents			
Evidence/Data			
Consequences (therefore)			
Part of (major category)			

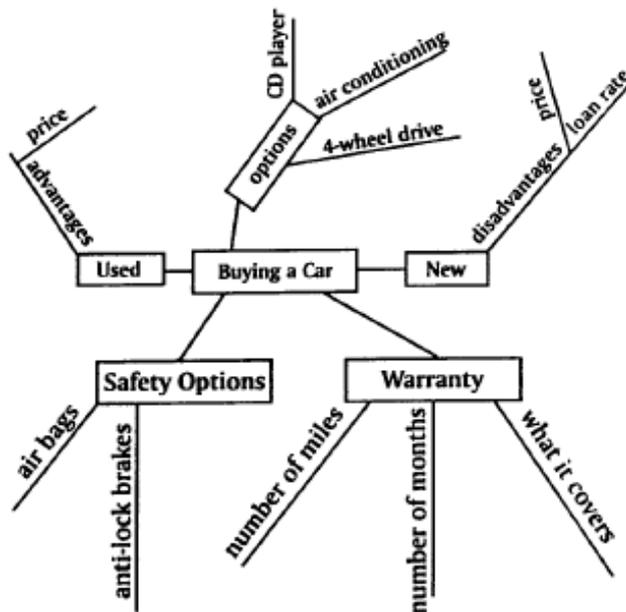
Source: Hart, 1998, p150

Concept maps

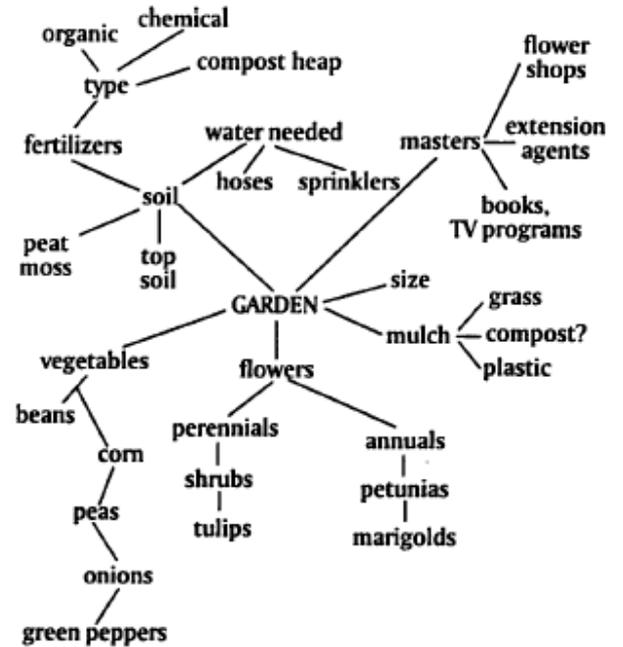
Concept mapping helps people to visualise the specific relationships among concepts related to an issue/concern and the organisation of these relationships (Croasdell, Freeman & Urbaczewski, 2003, p. 397). Concept maps show meaningful linkages and connections or concepts that can help make analysis more easily applicable and memorable (Whitson & Amstutz, 1997, p. 55).

Figure 1: Mindmaps and webs

Mindmap



Web

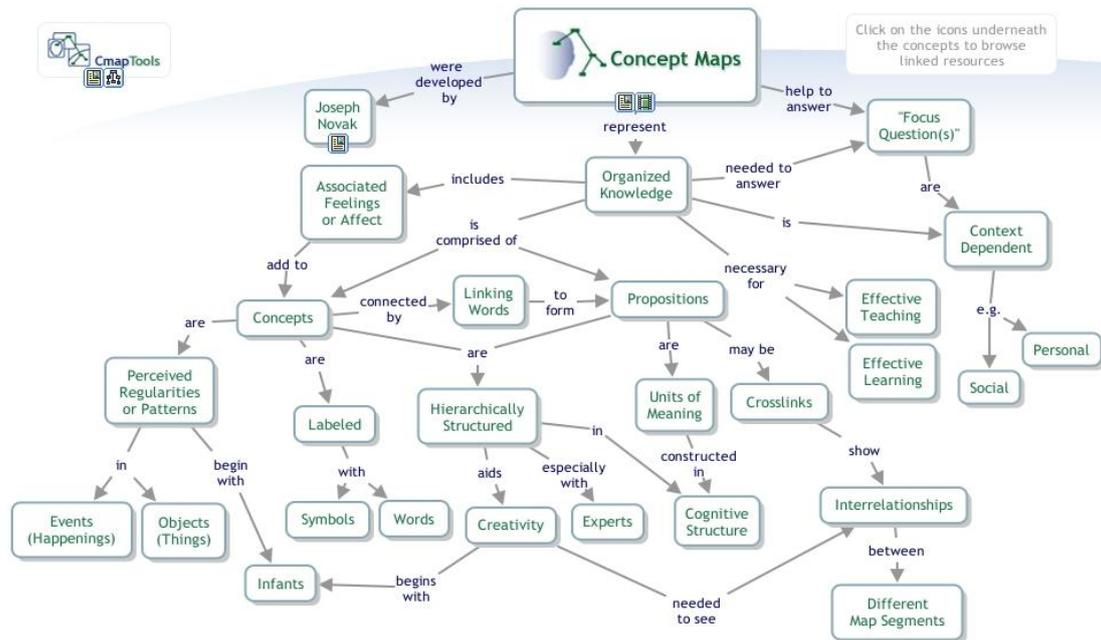


Source: Whitson & Amstutz, 1997, p. 57-58

Advantages of concept mapping

- It clearly defines the central idea.
- It allows you to indicate clearly the relative importance of each idea.
- It makes it easier for you to see information in different ways, from different viewpoints, because it does not lock it into specific positions.
- It allows you to figure out the links among the key ideas more easily. Concept maps help people think holistically as they work to understand the relatedness of ideas. Links between concepts are immediately recognisable because of their proximity and connection
- It allows you to see complex relationships among ideas, such as self-perpetuating systems with feedback loops, rather than forcing you to fit non-linear relationships to linear formats, before you have finished thinking about them.
- It allows you to see contradictions, paradoxes, and gaps in the material -- or in your own interpretation of it -- more easily, and in this way provides a foundation for questioning, which in turn encourages discovery and creativity
- It allows you to see all your basic information on one page.
- The structure allows for the easy addition of new information (Counselling Services - University of Victoria, 2003; Croasdell, Freeman & Urbaczewski, 2003, p. 400)

Figure 2: A concept map about concept maps



Source:

<http://65.212.118.148/servlet/SBReadResourceServlet?rid=1064009710027_1483270340_27090&partName=htmltext> accessed 9/8/05

Creating concept maps

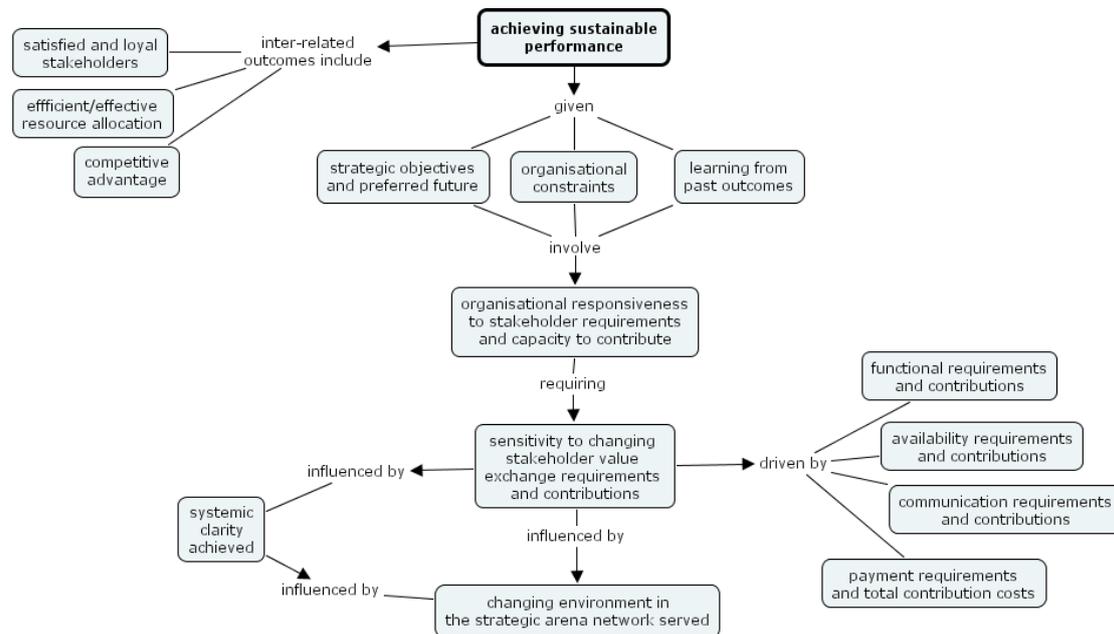
Steps in constructing concept maps (Canas, 2003; Croasdell, 2003; McAleese, 1998):

- a) Define the issue/concern or focus question to be analysed.
- b) Place this main concept in the middle of the page.
- c) Identify and list the most important ideas associated with this main concept.
- d) Place these ideas on the page and link them to each other and the main concept as appropriate using linking phrases to describe the relationship/s.
- e) Determine whether any unlinked single additional ideas or clusters of linked ideas not linked yet in any way to the main concept can be linked in anywhere or whether these should be discarded as not being tightly connected enough (or irrelevant in the current context) to the main concept.

NB - concept mapping software is available to assist in creating and editing concept maps.

Cmap (<http://cmap.ihmc.us/Index.html>) was used to create the map on this page.

Figure 3: A concept map dealing with achieving sustainable organisational performance



Source: Developed by IMIA, 2005

Analysis

What is involved in critical analysis of information (Hart, 1998, p176-177)?

1. Agreeing with, or defending a position, or confirming its usefulness through an evaluation of its strengths and weaknesses.
2. Conceding that despite an existing approach or point of view having some merits or useful features, it has drawbacks that mean it must be rejected in its current form.
3. Focusing on ideas, theories, and arguments and not on the author of those arguments, so as to produce careful, considered, and justified evaluation.
4. Being aware of your own critical stance; identifying your reasons for selecting the work you have criticised and recognising the weakness in your critique.
5. Selecting elements from existing arguments and reformulating them to form a synthesis: a new point of view on some subject matter.
6. Finding fault in an argument by identifying fallacies, inadequacies, lack of evidence or lack of plausibility.
7. Identifying errors or omissions in a criticism made by another to provide correction and balanced criticism thereby advocating the usefulness of the original work and reasons for rejecting the criticism made of it.

- Summarising the views and arguments that others have made in a way that is fair.
 - Don't assume the reader is familiar with the work with which you are dealing
 - Acknowledge, where appropriate, what points you agree with in an advocate's work
- Avoiding a stance that is heavy with statements. In order for your criticism to be legitimate you need to provide a structured explanation showing what you have found wrong in an argument.

Synthesis

Analysis is the job of systematically breaking down something into its constituent parts and describing how they relate to each other. ...The kinds of analysis relevant to literature reviewing are those which systematically extract key ideas, theories, concepts, and methodological assumptions from the literature (Hart, 1998, p110).

In synthesising available information the collected and categorised information is explored, insights are generated from this information and then linkages between these insights and the specified issue are creatively identified.

Table 4: Analysis, synthesis, comprehension and knowledge

Analysis	Select, differentiate, dissect, break up	Unpacking a thing into its constituent parts in order to infer or determine the relationship and/or organising principles between them; thereby isolating the main variables.
Synthesis	Integrate, combine, recast, reformulate, reorganise	Rearranging the elements derived from analysis to identify relationships or show main organising principles or show how these principles can be used to make a different phenomenon.
Comprehension	Understand, be able to explain, distinguish, interpret	Interpreting and distinguishing between different types of data, theory and argument; thereby being able to describe, discuss and explain in various ways the substance of an idea or working of a phenomenon.
Knowledge	Define, classify, describe, name, use, recognise, become aware of, understand, problem solve	Perceiving the principles, use and function of rules, methods and events in different situations; classify, characterise, generalise, analyse the structure of, and learn from experimentation on the meaning of, concepts and their application.

Source: Hart, 1998, p111

References

Canas A, Hill G, Carff R, Suri N, Lott J, Gomez G, Eskridge T, Arroyo M, and Carvajal R (2004) *CMAPTOOLS: A knowledge modeling and sharing environment*. In A. Cañas, J. Novak, & F. Gonzalez, eds. *Concept Maps: Theory, Methodology, Technology. Proc. of the First Int. Conference on Concept Mapping*

Counselling Services - University of Victoria (2003) *Learning Skills Program - Concept Mapping* http://www.coun.uvic.ca/learn/program/hndouts/map_ho.html, viewed 9 August 2005

Croasdell D, Freeman L, and Urbaczewski A (2003) *Concept maps for teaching and assessment*. *Communications of the Association for Information Systems* 12:396-405

Hart C (1998) *Doing a literature review: Releasing the social science research imagination*. Sage Publications:London

McAleese R (1998) *The knowledge arena as an extension to the concept map: Reflection in action*. *Interactive Learning Environments* 6(3):251-272

Webster J and Watson R (2002) *Analyzing the past to prepare for the future: Writing a literature review*. *MIS Quarterly* 26(2):xiii-xxiii.

Whitson D and Amstutz D (1997) *Accessing information in a technological age*. Krieger Publishing Co:Malabar, FL