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Strategies for Studying, Learning, and Researching
By David Alderoty © 2014

Chapter 5) Types of Questions and Information, and their Utility for Critical Thinking, Goal Attainment, Problem-Solving, Reasoning, Writing, and Creating Effective Search Phrases
1982 words

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Questions and their Utility for Problem-Solving, Goal Attainment, and Creating Effective Search Phrases

A General Problem-Solving Technique,
Based on Questions, and Search Phrases

Most **goals and problems** can be partly or totally, broken up into a series of questions.   This also applies to information in general. These questions can sometimes be answered by using them as search phrases.   **For example**, if the **goal** is to start a small

business, all of the questions in the following six paragraphs can be involved.

1) What type of business should I start?   What are my skills and experience, and are they useful for starting a business.   Can I make enough profit with this type of business, to support my family and myself?   What are the chances of success with this type of business?

2) How much money will I need to start this type of business?   How much money do I have in the bank to invest in the business?   How much will I have to borrow from the bank?   Is my credit good enough for a bank loan?   Should I mortgage the house to get a bank loan, or is that too risky?

3) Where should I locate the business, to maximize the number of customers?   How shall I advertise the business?   Is advertising effective for this type of business?   Is a website a good way to advertise?   Should I advertise with leaflets, and small ads in the paper?   Will my good reputation in the neighborhood help me get customers?   Is word-of-mouth adequate to get customers?

4) How long will it take before the business becomes profitable?   What will be my exit plan if the business loses money and does not improve over time?   If the business fails, how much money will I lose?   Will I be able to recover financially and emotionally if the business fails?   How will the financial problems affect my family, if the business fails?

5) How can I reduce my financial risks?   Will a partner help me reduce the financial risks?   Should I think of alternatives?   To

reduce my risks, should I start a very small business, or a home based business?   Will I be better off with a job instead of starting a business?

6) If I decide to go through with these plans, where can I find retail space?   Where can I find a contractor to build the storefront that I will need for my business?   How much would this construction cost?   Where can I get expert advice to help me with my business goals?   Who can help me write a business plan, and set up a website for my business?

The questions in the last paragraph can be answered with web-based searches, coupled with phone calls or e-mail. Questions that relate to money can be answered with mathematical approximations or estimates.   Many of the above questions can only be answered with speculations or possibilities.   Sometimes web-based searches can provide answers that relate to possibilities, such as statistics indicating the chances of success or failure, with a specific type of business.   Questions that relate to the emotional impact, if the business fails, can be evaluated by self-reflection and talking to family members.

Keep in mind, that the above is an example, and the same concept can be applied to writing a term paper, getting good grades in college, creating educational plans for a specific occupation.   The above technique can also be used to solve or alleviate adverse problems, such as financial difficulties, or conflict in a relationship.

TYPES of Questions and Information

Questions and Information Placed into Categories

There are many types of <u>questions and information</u>, and I am dividing them into categories.   This includes subjective and objective information.   An understanding of the different types of information and questions can be helpful with critical thinking, writing, and problem solving, and creating good search phrases.

NOTE: In the following paragraphs, I am omitting the word <u>information</u>, for conciseness.   Keep in mind anywhere you see the word <u>question</u> in this chapter, it means <u>information and questions.</u>

Presented below there are definitions for eleven types of questions.   There is some overlap between the categories, and thus some questions could be classified in more than one way.   For each of the definitions there are examples, which are search phrases in the form of a question.   **The search phrases are in blue, underlined text, and they are active hyperlinks.   That is, if you left click on them, you will see search results from Google, or Google video.   If a link fails, enter the search phrase into the indicated search engine.**

1) Questions that have answers that change with time:
Examples are **Who is the president of the United States?**
Google answered **Barack Obama.**   **What is the temperature in**

New York City? Google answered **26°F.**   If you click on the above link you will probably see a different temperature.

2) Questions that have answers that DO NOT change with time: Examples are What year was Sigmund Freud born? Google answered **May 6, 1856.**   **Who was the first president of the United States?**   Google answered: **George Washington. How many grams is one cubic centimeter of gold?**   Google answered **19.3 grams**.

3) Questions involving predictions, reactions, or final results of relatively simple systems: Questions in this category often involve the physical sciences, such as chemical reactions. The answers to the questions in this category can be tested experimentally, and the results will always be the same if the experiment is repeated, under the same conditions.   Examples are: **What will happen if "hydrochloric acid" is mixed with zinc?** Google indicated 3,250,000 results. **What is the "root mean square speed" of "helium atoms" at 25°C?** Google Indicated 42,200 results.

4) Questions that involve predictions, reactions, or final results, of highly complex systems: Examples of highly complex systems are seen in the social and psychological sciences, the economy, the stock market, global warming, medical science, and everyday human interactions.   With complex systems, there are many unknowns.   As a result, **questions** that involve **predictions**, **reactions**, and **ultimate outcomes** of complex systems usually cannot be answered with absolute certainty.   It is not always possible to carry out experiments with these systems, and when it is, the results will usually vary, even if the experiments were identical.   Experimental results, that involve highly complex

systems, are often evaluated with statistics.   An example of a question in this category is: **what will be the final results of the "Arab Israeli conflict?"**   Google indicated 3,780,000 results. **What will be the result of "global warming" OR "climate change"?** Google indicated 3,780,000 results.

5) Questions that can only be answered with speculations or possibilities: Questions in this category might have precise answers in the FUTURE.   Examples are: **"How can we get to Mars?"** Google indicated 37,800 results.   **How can "cancer be eliminated?"** Google indicated 7,210 results.   Amongst the **thousands of results**, **from the above**, there **might be ideas or methods** that can be used to create feasible technologies to go to Mars or prevent cancer.   This essentially sums up a valuable utility of this type of search.

6) Subjective questions: Answers to questions in this category are influenced or determined by **PERSONAL:** opinions, values, beliefs, needs, emotional tendencies, etc.   Thus, each person, group, organization, or nation will usually provide different answers to the same subjective questions.   Examples are **"When is war justified?"** Google indicated 89,600 results. **"What is the best political party?"** Google indicated 4,580,000 results.   Subjective questions, such as the above, can reveal information about the values, beliefs, needs, emotional tendencies of individuals, groups, organizations, and nations.

7) Objective questions: Questions in this category generally have only one correct answer that is factual in nature.   The answers to these questions are **NOT** related to personal opinions, values, beliefs, needs, or emotional tendencies.   See the following examples.   **What is the density of platinum?** Google answered:

The density of pure platinum is 21.45 g/cm3, the mass per given volume. **NOTE**: This should be written as **21.45 g/cm^3**
On Earth, what is the acceleration of gravity? Google answered: **That is to say, the acceleration of gravity on the surface of the earth at sea level is 9.8 m/s2**. **NOTE**: This should be written as **9.8 m/s^2**

8) Open-ended questions: These questions can be answered a number of ways, and they usually involve subjective answers. These Questions can be useful as search phrases, for evaluating opinions. Three examples are: **"What do you think about the United States?"** Google indicated 44,600,000 results **"What is the meaning of life"** Google video indicated 10,300,000 results. **"What do you think of Obama?"** Google video indicated 121,000 results.

    NOTE: It is sometimes better to do a **VIDEO SEARCH**, when search phrases, involve, opinions of individuals, such as the above. This is because videos can reveal more information than a webpage, such as emotional reactions, body language, facial expressions, and tone of voice.

9) Closed-Ended Questions: Questions in this category generally have only one correct answer, or they can be answered with yes or no. Examples are: **How high is the Empire State building?** Google answered **1,250' (381 m).** **Where was President Bush born?** Google answered **New Haven, CT George W. Bush, Place of birth**. Questions that can be answered with yes or no, or true or false, also fall into this category. An example is asking someone for a specific favor, such as can I borrow $20.

10) Questions involving definitions: An example "What is the definition of an isosceles triangle? " Google answered **Web definitions, a triangle with two equal sides.   "What is a paramecium?"** Google answered **a single-celled freshwater animal that has a characteristic slipperlike shape and is covered with cilia**.

NOTE: It is usually better to use online dictionaries for definitions, such as the following: www.merriam-webster.com or www.oxforddictionaries.com/us   However, you cannot enter the words in the form of a question in these dictionaries.

11) Questions involving subjective definitions: This involves the way people **PERSONALLY DEFINE** something, based on their opinions, experience, beliefs, feelings, needs, and emotional inclinations.   Examples are **"How would you define success?"** Google video indicated 7,180 results.   **"What is a good friend?"** Google video indicated 47,800,000 results.

NOTE: Questions involving subjective definitions can provide very interesting information about people, such as their beliefs, feelings, values, adjustment strategies, etc.   Questions in this category, can provide interesting information when they are used as video search phrases.

Important Concepts to Keep in Mind, from the Above

In this concluding subsection, I am going to summarize the most important concepts, illustrated with the eleven categories of questions, which were presented above.   These concepts are important for an adequate understanding of the material that will be presented in the next chapters.   This will include critical thinking, and evaluating information.

An understanding of the difference between: **<u>objective and factual information</u>**, and **<u>subjective, opinions, beliefs, values, and feelings</u>** are essential.   Objective and subjective information are both important, in writing, real-world problem solving, and goal attainment.   For example, whether a nation decides to go to war, or to settle a dispute by negotiation and compromise, can be partly or totally, determined by values.   This can include emotional concerns about loss of life.   However, decisions of this nature can also be partly or totally, determined by objective information, such as the quantity and quality of their military equipment.

It is important to understand the difference between simple and complex systems.   Simple systems are predictable, and often involve the hard sciences.   Complex systems are **not** 100% predictable, and they often involve the social, psychological, or medical sciences.   The behavior of complex systems can sometimes become more predictable, or more insightful, by applying statistical evaluations.

It is important to understand when information, such as predictions or theories are based on scientifically verifiable experiments, as opposed to **<u>speculations or possibilities</u>**. However, information or ideas that are based on speculations or possibilities can sometimes be scientifically verified.   Most of the scientific literature and modern technology initially were based on speculations or possibilities.

<mark>**From Other Authors: Additional and Supporting Information, and Alternative Perspectives, for Chapter 5**</mark>

Instructions

If you want more information, alternative perspectives or explanations, see the following websites and videos from other authors.   To access this material left click on the blue links, or the URLs presented below.

If a link fails, enter the indicated **search phrase,** or the *words that are displayed from the website,** into the search engine presented on the left of each entry.   If there are many words displayed from the website, select a few of the words that seem most useful for a search phrase.   Then, carry out a conventional web-based search.

*Note the words from the website are indicated with **Words on website:**   If you examine the following entries all of the above will be clarified.

Webpages from other Authors, to Support and Supplement The Concepts and other Material in Chapter 5

www.Google.com **Search phrase: Subjective and Objective Information**   **This is a Google search page, which indicates 13,600,000 results.**

www.Google.com **Words on website: Subjective vs Objective**, **URL is: http://goo.gl/hZiYqe**

www.Google.com **Words on website:** **What is the difference between a subjective and an objective opinion?** **URL is:** **http://goo.gl/yrh1Ar**

www.Google.com **Words on website:** **Beautiful" and the Metaphysics of Beauty** **URL is:** **http://goo.gl/xGCysA**

www.Google.com **Words on website:** **The Difference Between Objective and Subjective Data** **URL is:** **http://goo.gl/nc25Pp**

www.Google.com Search phrase: **Critical Thinking**, **This is a Google search page, which indicates 120,000,000 results.**

www.Google.com **Words on website:** **Critical Thinking: Basic Questions & Answers** **URL is:** **http://goo.gl/Y4Ww1u**

www.Google.com **Words on website:** **Questions and Critical Thinking** **URL is:** **http://goo.gl/k7vWwC**

www.Google.com **Words on website:** **Using Questions to Promote Critical Thinking By Cindy McClung, and Bob Hoglund** **URL is:**

www.Google.com **Words on website:** **Critical Thinking, Logic and Reason: A Practical Guide for Students and Academicsmore** **,URL is:** **http://goo.gl/IZ0j0l**

www.Google.com **Words on website:** **Distinguishing Between Inferences and Assumptions** **URL is:** **http://goo.gl/et7Y5O**

www.Google.com **Words on website:** **Defining Critical Thinking** **URL is:** **http://goo.gl/V42iqI**

Videos from other Authors, to Support and Supplement The Concepts and other Material in Chapter 5

When you left click on a **link** for a video, a webpage will open, and the video will start automatically in most cases. The webpage that

opens with the video will usually have 10 or more **RELEVANT**
videos.   If the video does not start automatically, and the webpage
opens, left click on the link provided by the author of the video.
This link is usually in the center of the screen.

**www.Video.Google.com   Search phrase: Subjective and Objective
Information, This is a Google video search page, which indicates
1,760,000 results.**

**www.Video.Google.com Words on website: Objective vs Subjective
info, URL is: http://youtu.be/Iv1725yFrBw**

**www.Video.Google.com Words on website: Subjective vs. Objective
Value: The Economist and the Philosopher, URL is:
http://youtu.be/6PeRBsEyakU**

**www.Video.Google.com Words on website: Objective versus
Subjective Claims Video, URL is: http://youtu.be/UYjIUC9Ppu4**

**www.Video.Google.com   Search phrase: Critical Thinking, This is a
Google video search page, which indicates 3,450,000 results.**

www.Video.Google.com Words on website: Critical Thinking Part 1: A
Valuable Argument**, URL is: http://youtu.be/iSZ3BUru59A**

**www.Video.Google.com   Words on website: Use Creative and Critical
Thinking for Professional and Personal, URL is: http://goo.gl/L323SC**

**www.Video.Google.com Words on website: Academic Writing: Critical
Thinking and Rhetorical Functions, URL is: http://goo.gl/7ksmBd**

**www.Video.Google.com Words on website: Learn the Power of
Critical Thinking w/Dr. Linda Elder, URL is: http://goo.gl/WbU5kn**

To go to the first page of this

chapter left click on these words.

HYPERLINK TABLE OF CONTENTS

Below is the hyperlink table of contents for this chapter.   If you Left click on a specific section or subsection, it will appear on your computer screen.   Note the red chapter headings, the yellow highlighted sections, and the blue subheadings are **all active links.**

**To go to the first page of this
chapter left click on these words.**

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left click on the link below**
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