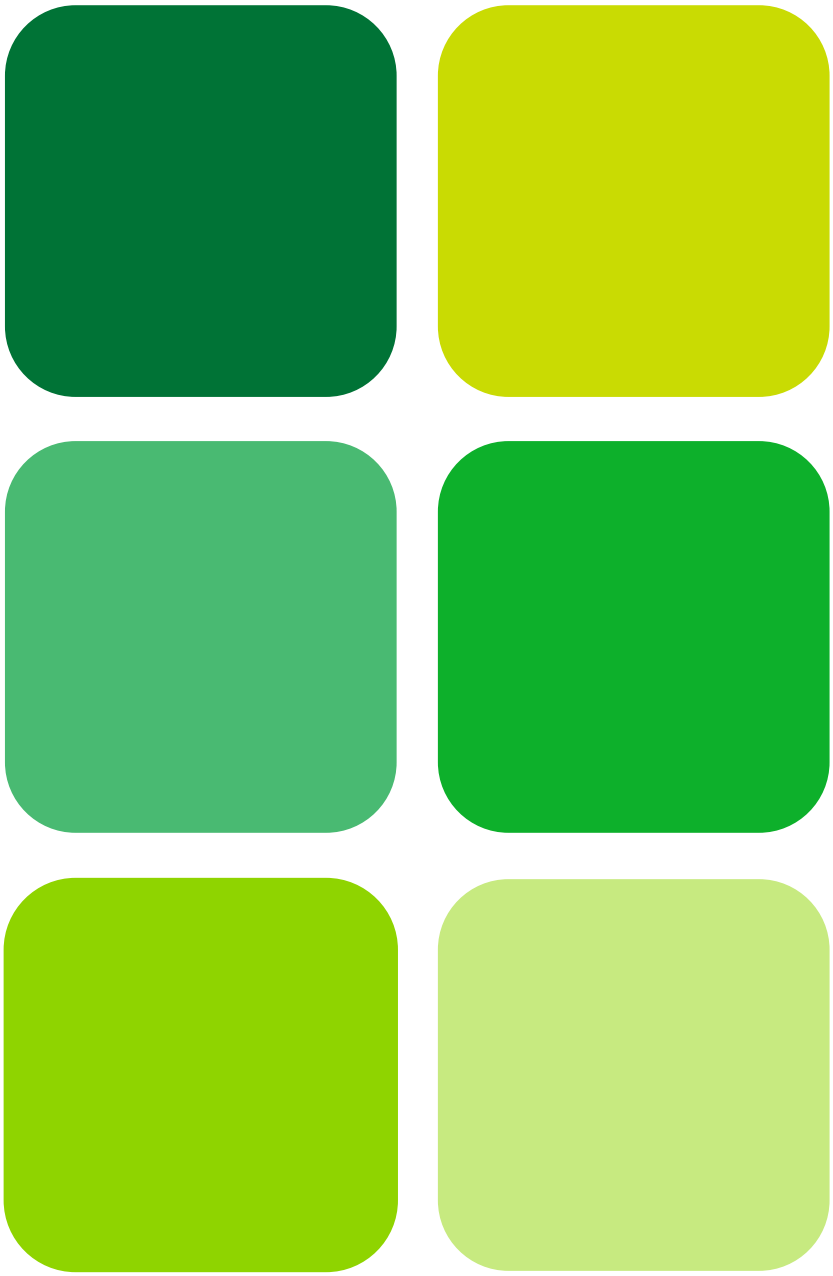


www.sapientia.uji.es | 68

UNIVERSITAT JAUME·I

Working with Technical and Scientific English

Mari Carmen Campoy Cubillo

Working with Techincal and Scientific English

Mari Carmen Campoy Cubillo

Departament d'Estudis Anglesos

Codis d'assignatura:
Anglès Cientificotècnic
(Idioma Modern)
Materia Bàsica Enginyeria
EX1005

Working with Technical and Scientific English - UJI - DOI: http://dx.doi.org/10.6035/Sapientia68

Edita: Publicacions de la Universitat Jaume I. Servei de Comunicació i Publicacions
Campus del Riu Sec. Edifici Rectorat i Serveis Centrals. 12071 Castelló de la Plana
http://www.tenda.uji.es e-mail: publicacions@uji.es

Col·lecció Sapientia, 68
www.sapientia.uji.es
Primera edició, 2012

ISBN: 978-84-695-4965-0

Publicacions de la Universitat Jaume I és una editorial membre de l'UNE, cosa que en garanteix la difusió de les obres en els àmbits nacional i internacional. www.une.es

INDEX

Unit 4

Unit 5

Introduction

This book is divided into five different chapters. You may follow chapters one by one or decide to choose different activities from each chapter each week. A key section providing information for the teacher is available at the end of the book. In the reference section you will find the sources of the texts used in this textbook, some reference bibliography, a corpus references and a list of online dictionaries and encyclopaedias.

A number of lexis activities in this book have been designed using SketchEngine[1], a corpus query system that allows automatic extraction of grammatical and collocational behaviour of words (i.e. how words are typically used in combination with one another). SketchEngine is a highly useful tool for teachers and learners alike since it easily provides practical and valuable information on specific word searches suggesting insightful ways to deal with vocabulary and specific topics a user may be interested in.

When you see this box it SKETCHENGINE means that the task has been designed using SketchEngine <http://www.sketchengine.co.uk/>. The British National Corpus was used selecting only written informative texts belonging to the applied science, natural and pure science domains in written books and periodicals. Data cited herein have been extracted from the British National Corpus[2], distributed by Oxford University Computing Services on behalf of the BNC Consortium. All rights in the texts cited are reserved. For some exercises sample sentences were taken from the *UKWaC British English Web Corpus*.

In unit one, a corpus of 25 research articles from journals specialised in technical ceramics (see references) is used in the design of the language study sections together with the BNC corpus.

1. SketchEngine <http://www.sketchengine.co.uk/> (see Kilgarriff, Pavel Rychly, Pavel Smrz and David Tugwell (2004). The Sketch Engine in Williams G. and S. Vesssier (eds.): Proceedings of the Eleventh EURALEX International Congress. Lorient, France, July: 105-11 6.) (Reprinted in *Lexicology: Critical concepts in Linguistics*, Hanks, editor. Routledge, 2007)
2. *The British National Corpus*, version 3 (BNC XML Edition). 2007. Distributed by Oxford University Computing Services on behalf of the BNC Consortium. URL: http://www.natcorp.ox.ac.uk/

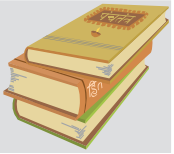
UNIT 1

An introducion to technical and scientific vocabulary

This unit is an introduction to some features of the morphosyntactic structure of technical and scientific vocabulary. It will also introduce some concepts and ideas on the use and understanding of information contained in online dictionaries and other lexical databases.

The aim of this unit is to become familiar with and infer the meaning of scientific and technical vocabulary by identifying the most common prefixes and suffixes in science and technology texts. We will also study examples of how to use and make the most out of online dictionaries.

FINDING INFORMATION: DICTIONARY USE



Aims) Students try to find out the main components of dictionaries. They should all bring one dictionary to the classroom (monolingual if possible). The main aim of the activity is to make students aware that dictionaries may be used for many other purposes different from finding translations for words.

Procedure) Students work in groups and fill in the questionnaire for their (personal) dictionary. Then, they fill in the final questions after a brief discussion with the group.

QUESTIONAIRE:

1. Which dictionary are you using? Write down its name here _____
   _____

2. How many languages does your dictionary include? Which ones?_____
   _____

   Is your dictionary (a) monolingual, (b) bilingual, or (c) multilingual? _____
   _____

3. How many different sections does your dictionary have? Write the name of the sections and explain what each section offers:

4. You will have noticed that the section including the list of words with information for each word is the longest one. Does your dictionary contain the following information? Write an example for each kind of information it does contain:

   a) entry

   b) pronunciation

   c) different word spellings (Am. /Br.)

   d) different forms of the verb or noun

   e) translation of words

   f) different meanings of the same word

   g) examples of use

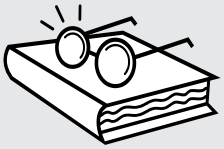
   h) grammar explanations

   i) style comments

   j) idioms

   k) pictures / drawings

How do you know that different information is provided? Do the different features share the same format or are they highlighted in a different way (e.g., italics, bold, capital letters...). In the previous list, state which format is used for the different kinds of information.



We will now:

· Introduce word-formation with special emphasis on AFFIXATION (prefixes and suffixes)
· Discuss how social and cultural issues lead to the formation of new words which are flexible enough to allow the generation of several or many related terms.

In this section you will be asked to:

- listen to a text about plastic light-emitting diodes and their influence on the optical telecommunications market
- identify some compound words
- define new compound words
- decide which hyphenated words fit better in a number of example sentences

We will discuss some issues related to word formation. First, a number of hyphenated words will be identified. Then, we will pay attention to the prefix «cyber-» in order to study how new words may be formed. After this, we will examine a few examples with degree prefixes.

UNDERSTANDING THE LANGUAGE

Word Formation

There are three main types of word-formation: AFFIXATION (adding prefixes or suffixes to a base: un-friend-ly, pre-determine), CONVERSION (a word is converted into a new class, release (noun) > release (verb)), and COMPOUNDING (the joining of two bases where the first usually subcategorizes the second: bottle-feed). In this book we will study affixation only but you may go to the references for more information on word formation.

Important categories of both technical and non-technical terms are:

❶ Novel forms. Most are borrowings, initialisms (the first letter or letters of words in a phrase: ESP for **E**xtra**s**ensory **P**erception) and acronyms. An interesting example of acronym is defined below:

S-W-A-G stands for a Scientific Wild Ass Guess. It's sometimes used more as a tongue-in-cheek way of saying: «This estimate isn't really reliable. I pulled it out of the air.»

Taken from *How to Turn a WAG (Wild-Ass-Guess) Into a SWAG (Scientific-Wild-Ass-Guess)* (http://www.gettingpredictable.com/how-to-turn-a-wag-wild-ass-guess-into-a-swag-scientific-wild-ass-guess/)

READING COMPREHENSION

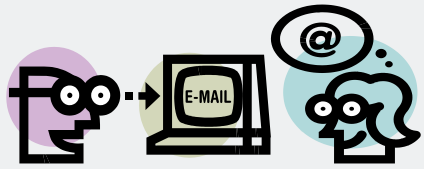
Read the whole article from which the definition of SWAG is taken and try to summarise its content.

Novel words are closely followed by:

❷ Words formed from roots already existing in the language and in frequent use. According to Van Dyke (1992:390), «Their roots' definitions associate them with their new fields of meaning. Familiar in form and at least partly self-explanatory they lie on the border between new words and descriptive phrases. They are well-suited to a culture committed equally to innovation and accessible mass communication».

In fact, «Reality determines the language used to describe it, the way in which new terms are created may reveal (and)... help to create the kind of object that is known and the kind of knowledge that is formulated» (Van Dyke, 1992:394).

It should be pointed out that texting processes resemble to a large extent to initialisms and acronyms.



WRITE AN EMAIL TO A CLASSMATE

Have some fun: go to the Dictionary of Text Messaging Abbreviations and Acronyms for Chat, E-mail, Mobile & Cell Phones (http://www.webwasp.co.uk/define/SMS-text/a/index.php). Be creative and try to compose a long message combining several of the entries in this dictionary. Send it to a classmate to see if they can understand the message. The first person able to decipher the message without looking at the dictionary will win the game.
Example: AYK we R W4Y @ the WKND

1. AFFIXATION

In English we may build up words by adding morphemes before or after a root or base word. We call this prefixation and suffixation.

Phonetics: Prefixes and suffixes are usually unstressed but this is not so:

- for the suffix -ette which has the primary stress
- for disyllabic prefixes (inter-)
- when the base a prefix attaches to is unstressed (unattractive: /ˌʌnə'træktɪv/)
- when the prefix is used to indicate a new use of an old item (re-, pre-)

(See: Quirk 1985, and Bauer 1983)

1.1. PREFIXATION is a productive resource in the language of science and technology since it allows the creation of new concepts which are also transparent enough to be generally understood by a professional community.

The list below explains the meaning of common English prefixes that are used in scientific and technical texts.

Common prefixes are:

a = no, absence of, without	mono = one, single
ab = away from, off	morph = shape, form, appearance
ante = before, prior to	poly = many or much
aqua/hydr = water	pro = before, in favour of
bi = two, twice	re = do something again
circum = in a circle, around	sub = under, below
co = together, to the same extent	super = superior in size, quality or degree, exceeding the norm
de = undo, apart, away, do the opposite	
dis = in all directions, apart, away	syn = joined together
en = into, in, within	trans = across or through
ex = outside, out of	tri = three
hyper = above, high	ultra = beyond, to an extreme degree
hypo = below, deficient, under	un = not
infra = inferior, beneath	uni = same, one
isos = equal, uniform	

Number: some prefixes indicate number, for example:

1 – mono, one (as in one-fire)	9 – nona
2 – di, bis, bi	10 – deca
3 – tri(s)	100 – hectato

4 – tetra	1000 – kilia
5 – penta	100000 – myria
6 – hexa	nano – a billionth
7 – hepta	semi – half
8 – octa	multi – many

There are also **time prefixes**, like pre-, ante- (meaning before), post- (after). **Negative, privative and pejorative prefixes** are common to indicate the opposite meaning to that of the root word or to express a negative quality or process. Examples of negative prefixes are: anti-, dis-, il-, in-, mal-, mis-, non-, pseudo-, un- as in antifreeze, incomplete, malfunction, malware, misaligned.

Degree prefixes

The prefixes ***ultra-***, ***super-***, ***over-***, ***extra-***, and ***hyper-*** are very frequent in science texts. They are used to convey a similar meaning: a high degree or amount of something (i.e., they may be paraphrased with expressions such as «very big», «extremely», «very» or «superior»).

The lexicon of present-day English is changing rapidly and regularly, but lexical change usually involves material already present in the language system. Prefixes can be attached to a noun, an adjective, past participle, or verb, in order to generate neologisms in scientific English.[3] Observe the examples below:

SUPER-	EXTRA-	HYPER-	OVER-	ULTRA-
Super + Noun *super-computers* Super + Adj. *super-galactic* Super + Past Part. *superheated*	Extra + Noun *extra-length* Extra + Adj. *Extra-big*	Hyper + Noun *hypersystem* Hyper + Adj. *hyper-accurate, hyper-dense* Hyper + Past Part. *hyper-abreviated*	Over + Verb [finite and non-finite verbs] *over-concerned, over-speeding, over-design* Over + Adj. *over-stimulated* Over + Noun *over-reaction* Over + Adverb *over-friendly*, *over-sixties*	Ultra + Noun *ultrafiltration (technique)* Ultra + Adjective *ultra-pure, ultra-sharp* Ultra + Adj. + N. *ultra-high-temperature (treatment)* *ultra-low-sulphur* (*diesel*)

3. This information is based on Campoy, M. C. and Coll, J. F. (2001) «Degree and Size Prefixes in Scientific English: Neologisms With *Ultra-, Super-, Hyper-, Extra*, and *Over-*». in Palmer, J. C.; Posteguillo, S.; Fortanet, I. (Eds.) *Discourse Analysis and Terminology in Languages for Specific Purposes.* Publicacions de la Universitat Jaume I. 313-324.

Some of the roots joined to these prefixes require a specific prefix+root combination. These specific usages do not accept the use of another prefix with the same meaning. Examples are: ***ultra-violet, ultra-sonic,*** or ***hyper-text.***

Other degree prefixes may be used freely to combine with the same roots (usually roots of a general nature). Although some of these combinations may be used to convey the same sense, there is a gradation in degree and size which goes from the lowest to the highest in the following order:

super- > extra- > ultra-

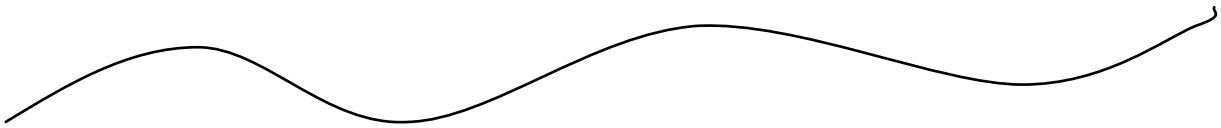
When more than one prefix is possible with the same base, it should be pointed out that the higher the prefix the more likely it is for the resulting word to be related to a more specialised field. Thus, we talk of extra-sensitive photographic film but of ultra-sensitive gamma-ray detector.

All the prefixes in the table above express a high degree of something, but some of them show particular preferences:

While extra- tends to combine with more general words (extra-high, extra-long, extra-strong), hyper- is usually combined with more specific terms (hyper-cholesterolaemia).

The prefix over- has a negative prosody which means that it adds a negative value to the words it is attached to. Thus, if you are enthusiastic about something it means that you show a lively interest in something or show great excitement and interest about something (for instance, we may talk about an enthusiastic response) but if you are overenthusiastic it means that maybe you are being too enthusiastic and this enthusiasm excess may have some negative effects or consequences: «there is nothing more dangerous than an over-friendly wild or feral animal».

The pattern Ultra + Adjective + Noun (e.g., ultra-high-temperature treatment, ultra-low-sulphur diesel) is usually found with the adjectives high and low.

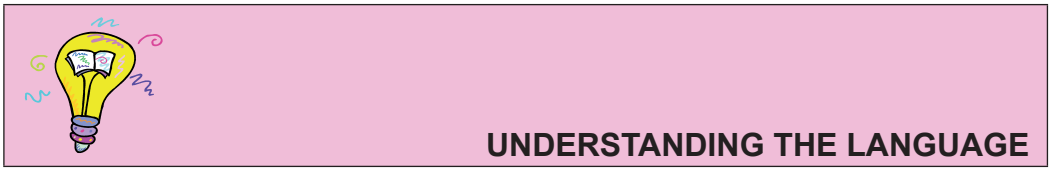


Combine the prefixes super-, extra-, ultra-, and over- with the following word bases to fill in the gaps in the sentences below:

Large (2) production (1) fast (2) long (2) pricing (1) cold (2) high (2) sensitive (2) positive (1)

- Because they are run on your PC rather than across the Internet they do not require a powerful computer and _____ connection.
- There will be new forms of military remote sensing equipment, and low cost instruments for analysing _____ chemical and biochemical reactions.

- Critique of what is claimed to be a new, _____ stereotype of ageing which denies its problems.
- Hotronic says the batteries were developed for _____ conditions.
- Researchers at the University of Innsbruck have done just that with _____ lithium atoms, chilled to within 200 millionths of a degree of absolute zero.
- Using an _____ SPF sunscreen that - according to conventional reason - can stave off skin tumours.
- Terrestrial television transmission is _____ frequency (UHF).
- This will be captured on _____ photographic film.
- NASA's _____ gamma-ray detector will ride on its Gamma-ray Large Area Space Telescope.
- Kipnis and Tsang (1984b) analysed the S&P500 index for the period from April 1982 to January 1983 and, after allowing for transaction costs, found a considerable number of departures from the no-arbitrage condition, with both _____ and under_____ being present.
- This was achieved by building an _____ cavern in Norway which goes back to the early 1970s.
- They jumped in size from 200 000 to 300 000 and even 400 000 tonnes, earning the title ULCCS, for _____ crude carriers.
- This helped the animal to be active and healthy despite being handicapped by _____ feathers.
- NASA's _____ Duration Balloon (ULDB) project.
- Oestrogen has a negative feed-back effect on the pituitary gland thus checking _____ of FSH-RH.



AFFIXATION:

1.2. SUFFIXATION

Suffixes may be added to nouns, adjectives or verbs. It may be helpful to know the most common ones in order to recognise their meaning when you come across new words containing them. Have a look at the table below. In it you will see a list of suffixes that are added to different word classes. For each suffix, try to add an example:

Suffix	*Meaning*	*Example*	*your example*
Verb Suffixes			
-ate	become	eliminate	
-en	become	harden	
-ify, -fy	make or become	mummify	
-ize, -ise	become, make, do sth. with	synthesize	
Noun Suffixes			
-acy	state or quality	accuracy	
-al	act or process of	rehearsal	
-ance, -ence	state or quality of	protuberance	
-dom	place or state of being	freedom	
-er, -or	one who	worker, warrior	
-ism	doctrine, belief	journalism	
-ist	one who	chemist	
-ization	process or result of doing sth.	fossilization	
-ity, -ty	quality of	alkalinity	
-ment	condition of	development	
-ness	state of being	loneliness	
-ship	position held	scholarship	
-sion, -tion	state of being, action or process	intimidation	
Adjective Suffixes			
-able, -ible	capable, inclined to	breakable,	
-al	pertaining to, of the kind of, having the form of	fictional	
-ful	notable for	powerful	
-ic, -ical	relating to, having the characteristics of	biological, ethic	
-ious, -ous	characterized by, having the quality of, full of	religious, poisonous	
-ish	having the quality of	greenish	
-ive	performing, having the nature of	creative	
-less	without	odourless	
-morph	shape, form or appearance	allomorph	
-y	characterized by, condition	sleepy	

Listen: Biological and Chemical Warfare

The following text will be read by your teacher. Listen carefully and try to understand and then write the missing words. After reading the text you may want to try and write a summary.

Biological and Chemical Warfare

During the gulf war, the threat of Iraqi chemical and biological weapons felt very _____, because it was known that Iraq had done extensive research on these weapons. In the wake of the September 11 terrorist attacks, the threat feels very ____ again. A chemical or biological weapon used in a large city would kill thousands of people.

Understanding Warfare

There is an interesting paradox when it comes to war in the modern world. Anyone who has experienced war knows that it is about death and _____ on a massive scale. **People die one at a time** because of bullets, _____, hand _____ and _____, and **they die in large groups** because of _____, _____ and _____. Buildings, factories or entire cities get destroyed.

Despite the appearance of anarchy, warfare between modern nations does have rules. These rules, for example, tend to discourage the wholesale destruction of _____, and they govern the treatment of _____. The rules are not always followed to the letter, and many times are broken completely, but they do exist.

Chemical weapons were _____ used in World War I, and the nations of the world quickly and uniformly decided that these weapons went too far. Apparently, killing people with flying metal and explosives was one thing, but launching a cloud of deadly chemicals – the effects of which could neither be predicted nor controlled – was another. Significant _____ prohibiting biological and chemical weapons, starting as early as the *1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare*, have been signed by most nations of the world.

The unfortunate problem is that terrorists, and rogue nations like Iraq, don't pay attention to significant international treaties. That is where the threat of chemical and biological weapons used in random attacks on innocent civilian populations comes _____.

The Basics of Chemical and Biological Weapons

Like a nuclear bomb, a chemical or biological weapon is a weapon of mass destruction. An effective attack using a chemical or biological agent can easily kill thousands of people.

Chemical Weapons

A chemical weapon is any weapon that uses a manufactured chemical to kill people. The first chemical weapon used effectively in battle was _____, which burns and destroys lung tissue. Chlorine is not an exotic chemical. Most municipal water systems use it today to kill bacteria. It is easy to manufacture from _____ table salt. In World War I, the German army released tons of the gas to create a cloud that the wind carried toward the enemy.

Modern chemical weapons tend to focus on agents with much greater killing power, meaning that it takes a lot less of the chemical to kill the same number of people. Many of them use the sorts of chemicals found in _____. When you spray your lawn or garden with a chemical to control _____, you are, in essence, waging a chemical war on aphids.

Many of us tend to imagine a chemical weapon as a bomb or missile that releases highly toxic chemicals over a city (for example, the movie *The Rock* featured a scenario in which terrorists tried to launch a missile loaded with the chemical VX, a nerve toxin). But in 1995, the group Aum Shinrikyo released sarin ___, a neurotoxin, in the Tokyo subway. Thousands were wounded and 12 people were killed. No giant bombs or missiles were involved – the terrorists used small exploding cannisters to release the ____ in the subway.

Biological Weapons

A biological weapon uses a bacteria or virus, or in some cases _____ that come directly from bacteria, to kill people. If you were to dump a load of manure or human _____ into a town's well, that would be a simple form or biological warfare – human and animal manure contain bacteria that are _____ in a variety of ways. In the 19th century, American Indians were infected with smallpox through donated blankets.

(Adapted from *How stuff works*: Marshall Brain, «How Biological and Chemical Warfare Works» http://www2.jogjabelajar.org/modul/how/b/biochem_war/biochem-war.htm)

Adjective suffixes: suffixes such as -al/ial, -ic, -ous/-ious, -ed, -ful, -ish, -y, -like, -ly, form adjectives from nouns (accident>accidental, atom>atomic, ambition>ambitious, point>pointed, success>successful, child>childish, home>homeless, mother>motherly, hair>hairy).

The word «biologic*al*», is an adjective ending in *-al*, the same as «chemical», «bacteriological», «international», or «municipal». The meaning of this suffix is «having the properties of» or «having a relation to the (noun)».

In the text above, the adjective «biological» is used to qualify some nouns to form collocations of adjective+noun. These collocations or pairs of words are so common that you also use them in your own language. Try to find biological+noun combinations in the text and give the equivalent in your own language (there 4 are different ones, 2 of them appear both in the singular and plural forms):

	In English we say ...	In Spanish/In Catalan we say...
1.		
2.		
3.		
4.		

☺ Do you know which nouns do the adjectives biological, chemical, municipal and international come from?

Answer: _____

;) Do adjectives have a plural form in English? The adjective «chemical» appears in the text and also the word «chemicals». Is this an adjective? What is it? What does it mean?

Answer: _____
_____
_____

✱ Find definitions for chemical (2) and biological (1) weapon(s) in the text:

1.-

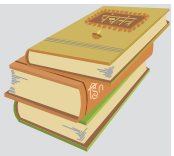
2.-

3.-

You may use the sample phrases below to help you build the definition for «biological»:

1. ...are three ways to spread a chemical or [[biological]] agent so that it would infect a large...
2. ...An effective attack using a chemical or [[biological]] agent can easily kill thousands of peo...
3. ...ile explodes, spreading the chemical or [[biological]] agent over a wide area. A crop-duster...
4. ...ack in order to be protected. Feared [[Biological]] Agents There are many ways to impleme...
5. ...d eight of the most-feared chemical and [[biological]] agents. There are dozens of others tha...
6. ...other. Significant treaties prohibiting [[biological]] and chemical weapons, starting as earl...
7. ...complete skin covering when chemical or [[biological]] attack is deemed possible. If a city w...
8. ...nts There are many ways to implement a [[biological]] attack, but these are some of the most...
9. ...le. Tom Clancy has explored the idea of [[biological]] terrorism in two books: «Executive Ord...
10. ... The Ebola virus was popularized as a [[biological]] warfare agent by two books written by...

FINDING INFORMATION



1. What is the difference between these two definitions? Using your own words explain the information you may get from the second definition that is not provided in the first one.

   amicable suitable between friends;friendly; peaceful (LDOCE)
   amicable an **amicable** arrangement or solution is one where people who do not agree with each other are able to solve their problems in a friendly way. (LEA)

2. Read the following definition for ***cause***. Which of the examples below would you use and why?

   ***Cause*:** to make something happen, especially something bad

   ex 1– Running a pump at too high a speed causes loss of lubrication, which can cause early failure

ex 2– A badly worn pump could cause pressure loss
ex 3– The situation caused me a lot of happiness.
ex 4– The new law introduces the principle that GM farmers and GM operators are financially liable for economic damage caused if their crops contaminate non-GM products
ex 5– it caused me a state of well-being and of contentment
ex 6– Unresolved water sources will cause renovations to deteriorate quickly, whether the water comes from building leaks, plumbing leaks or high humidity
ex 7– Seeing her again caused me great joy

3. Read the following examples taken from two dictionaries:

Careless driving kills / He was killed with a knife / Cancer kills thousands of people every year / We need something to kill weeds (ALD5)

More than 1,000 people have been killed by the armed forces / Cattle should be killed cleanly and humanely / The earthquake killed 62 people / Heroin can kill (COBUILD 2)

a) What can you say about the grammar of kill?
b) In what kind of contexts do you use this word? What kind of subjects and objects appear with it?

Working on Definitions

Aims) *General*: Listening to a short text/definition. Speaking (whole class): Giving reasons and opinion.

Specific: Recognising definition structures. Differences between similar concepts.

Procedure) The teacher reads the definition of a concept or word(s) and asks students to write the word they think is being defined. There may be several possible answers. They discuss their choices and decide on one item. The teacher then reads the definition for a similar concept to disambiguate doubts and discusses differences with the class. Students should consider their choice and make up their minds after listening to the first definition again (also the second if necessary) and reason out why it was one thing and not the other.

Notes:

- Students may discuss with their classmates any word or sound they have not understood and help each other to reach a consensus on what was heard.
- If students have no idea as to what the first word is, the teacher may write all the possible words on the blackboard. The teacher decides how many words to present initially; the suggested initial number is two, which may be expanded to six if students introduce the words in their discussion. If the

students recognize the first word and have no doubts about it, the task may follow a linear structure and the teacher goes on giving definitions to see if they recognize them all.

- Definitions may be of single words or (fixed) ESP collocations (seed coat, seed onion, seed rate, seed ripeness). General English words may also be used (A good idea is to work on entries provided in the Longman Language ACTIVATOR dictionary).
- The focus may be on content but also on aspects such as word formation or the syntax of a word. Derived words, for instance, will make students pay attention to the use of suffixes (saline, salinity, salination / salinization, salinized). The same word with two grammatical functions is another possible option (landscape vb./n.).
- If the students show that they like this kind of activity they may be asked to bring in their own definitions and play the teacher's role. Adequacy of choice should be discussed with the teacher first.

Suggested words)

FERTILIZER, COMPOST, MANURE, GUANO	
Fertilizer	Chemical or natural substance spread and mixed with soil to make it richer and stimulate plant growth
Compost	Vegetation decomposed under aerobic conditions
Manure	Animal dung used as fertilizer
Guano	Mass of accumulated bird droppings, found specially on small islands in the sea, and used as fertilizer (it is a natural phosphate).
Slurry	Liquid waste from animals, stored in tanks and treated to be used as fertilizer; it may also be stored in a lagoon, from which it can either be piped to the fields or transferred to tankers and then distributed

(Definitions taken from: Stephens, Alan (1996) Dictionary of Agriculture. Middlesex: Peter Collin Publishing)

SOIL DRAINAGE, SOIL FERTILITY, SOIL SALINITY, SOIL TEXTURE	
Soil drainage	Drainage of water from soil (either naturally or by putting pipes and drainage channels into the soil)
Soil fertility	Potential capacity of the soil to grow plants
Soil salinity	Measurement of the quantity of mineral salts found in a soil
Soil texture	Relative proportions of sand, silt and clay particles in soil

(Definitions taken from: Stephens, Alan (1996) *Dictionary of Agriculture.* Middlesex: Peter Collin Publishing)

LANDSCAPE

Landscape (noun)	The general shape and appearance of an area of land
Landscape (verb)	To change the appearance of a garden or park by planting trees, creating little hills, making lakes, etc.

(Definitions taken from: Stephens, Alan (1996) *Dictionary of Agriculture.* Middlesex: Peter Collin Publishing)

UNDERSTANDING THE LANGUAGE

Some key verbs in research articles SketchEngine

In the following pages, we will review some of the most frequent verbs in research articles in the field of chemistry by analysing a corpus of written academic and technical papers. Most scientific disciplines employ the same key verbs in research papers. It is important that you know how to use these verbs, so pay attention to the explanations and examples given below. Please not that the collocations (words that are frequently used with these verbs) in a number of the examples below are taken from chemistry texts.

VERBS OF PERCEPTION AND MENTAL PROCESSES
A number of the most frequent verbs in research articles refer to a mental process where the researcher finds out something about a method, material or process. These are the verbs *calculate, consider,* and *determine.* Verbs like *show* and *observe* are verbs of perception and refer to the way attention is directed to something. *Observe* and *study* refer to the previous action that leads to the finding.

CALCULATE:

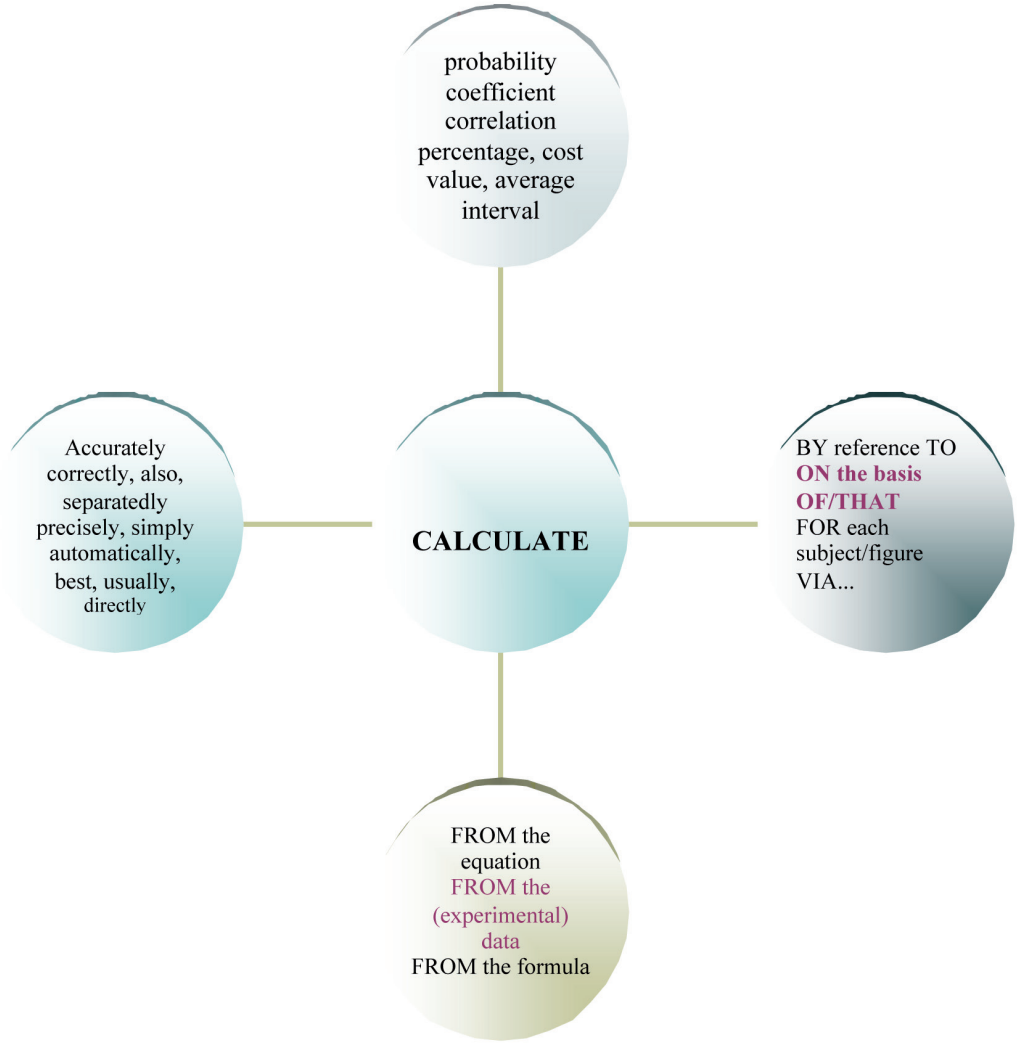
The verb *calculate* frequently collocates with the preposition *from* or *with* (can be calculated from / something is calculated with absorption and scattering coefficients), *values, parameters*, and the word *(observed, non-corrected) transmittance*:

(1) The absorption and scattering coefficients of turbid media could be calculated from observed transmittance
(2) (...) we have to develop computer programs to calculate the probability of the 'top' failure. These programs have to accommodate conservatively any

uncertainties in data, and then assign an overall value of uncertainty to the probability of the system failure.

The words *via/with/using* introduce the way or method used in the calculation:

(3) difference was calculated using an equation which ...
(4) damage resistance parameter Rt was calculated via equation (1)

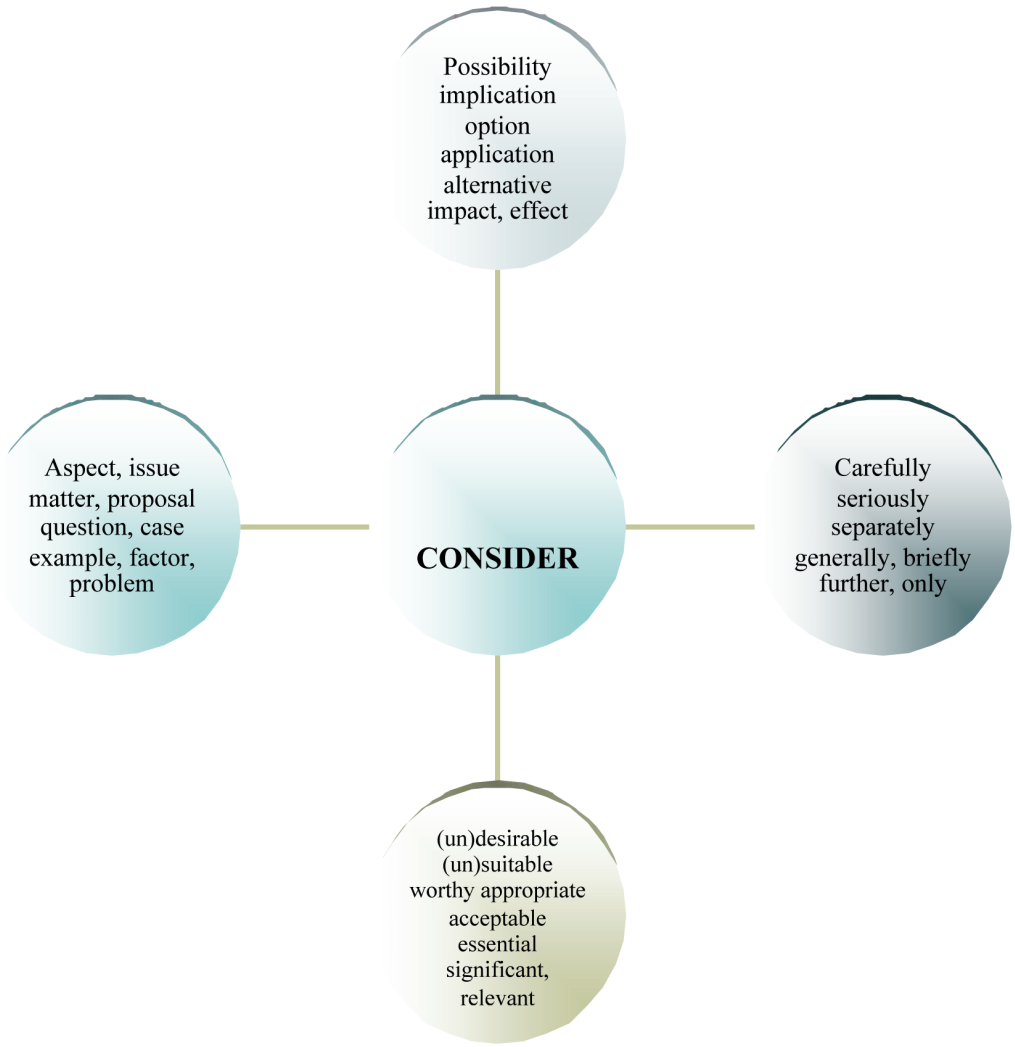


CONSIDER: collocates with the words *method, results, model, details.*

(5) kinetic model may be considered for these heterogeneous ...
(6) results were considered sufficient in order to ...

The expression «was/were considered to be + participle/adjective» is preferred instead of a direct statement of the type «It/this was caused/influenced by ...» and expresses a more impersonal point of view or a lower degree of conviction:

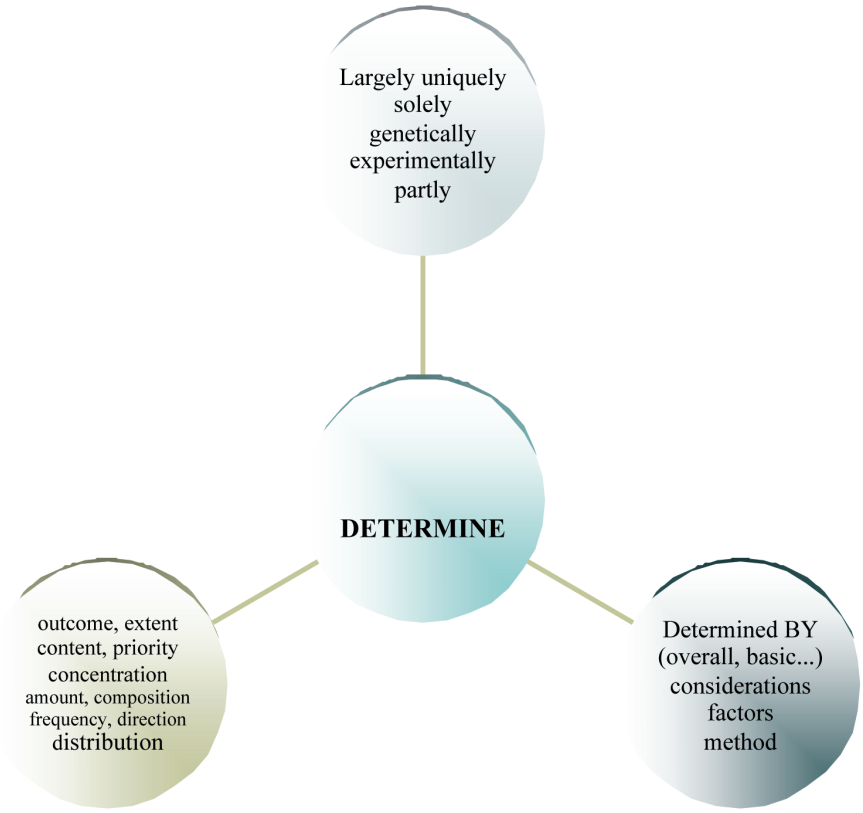
(7) The full discussion must wait for Chapter 5 but we can begin to get an insight into how this comes about when we consider the second property of quantum mechanical states.
(8) These coefficients are considered to be influenced by size, distribution,...
(9) it was therefore considered to be negligible
(10) (...) with clay content was considered to be caused mainly by iron



DETERMINE: The infinitive (expressing an end or finality) appears in periphrases of the type «calculated to determine», «conducted to determine», «used to determine», etc. where a specific activity leads to a determination, or preceded by adjectives like «difficult to determine», «necessary to determine».

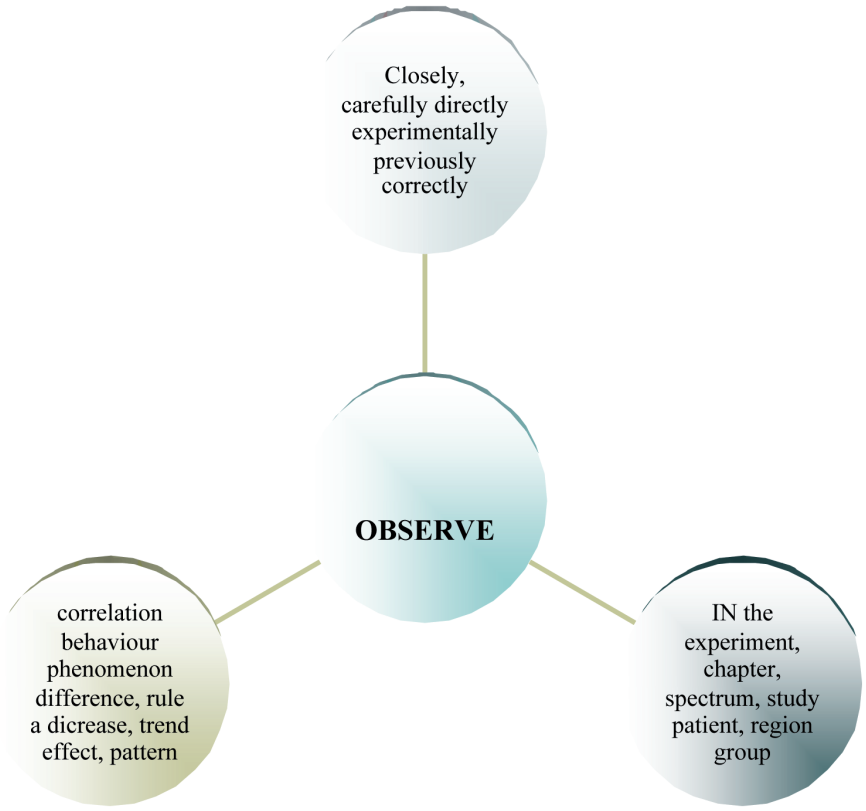
Words related to some kind of measure, like *value, parameters* or with the characteristics of some material, like *fracture, mass, viscosity, size* are the most frequent collocates of *determine.* The preposition *by* introduces a method:

(11) This technique, known as very-long-baseline interferometry (VLBI), can determine with great accuracy the distance between two points on the Earth's surface by using radio telescopes.
(12) It was then conducted to determine the effect of viscosity on...
(13) It is often difficult to determine the exact values of the...
(14) the parameters that determine the molecular size and...
(15) phase chemistry were determined by X-ray fluorescence



OBSERVE: The most frequent collocates of *observe* are those related to the size and shape of the materials (*crystals, (micro)structures, grains, difference, shrinkage, mass loss*) some refer to negative results (*impurities*). The word *temperature* and also words such as *values* and *phases* are also usual collocates:

(16) One would therefore have to believe that many or most of the observed particles such as gluons or quarks are not really elementary, as they seem at the moment, but that they are bound states of the fundamental N = 8 particles.
(17) mullite crystals were observed by SEM
(18) Extremely high levels of impurities were observed in the green parts because of wear



SHOW: *Show* differs from the previous verbs in that here the researcher somehow assists the reader to perceive something. Thus, words like *behaviour, tendency, trend, performance* collocate with show to indicate how something develops and what happens when a specific material or method is employed in an experiment:

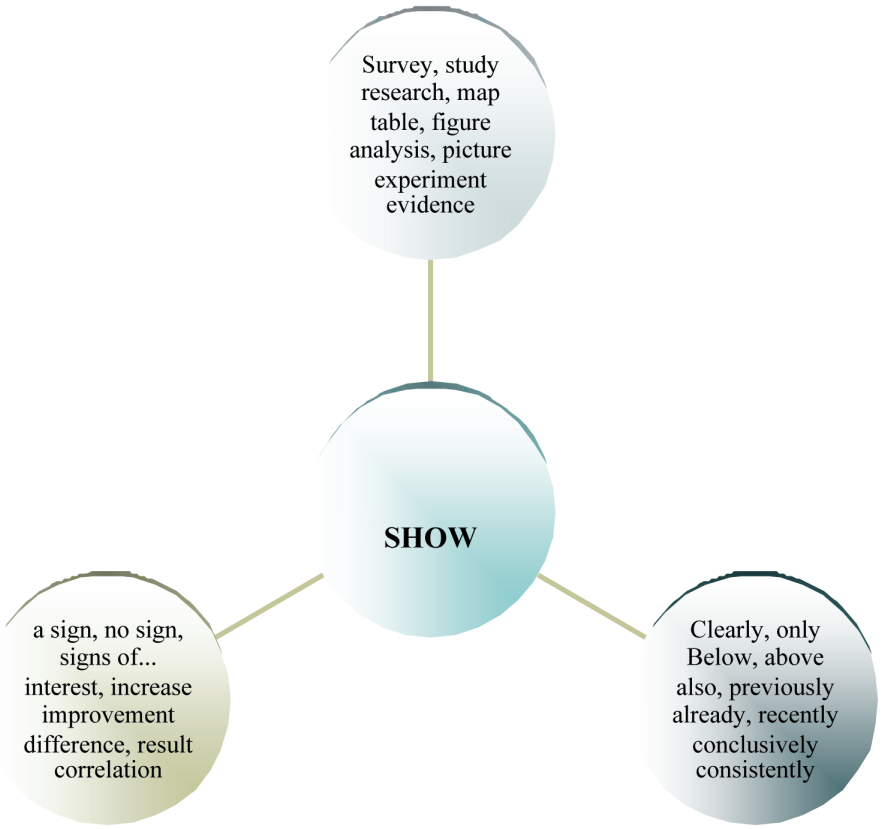
(19) with wavelength showed almost the same tendency as
(20) The distribution of salt concentrations at which the isolates agglutinated is shown in Figure 3. There was no significant difference between the groups.
(21) All binders showed the same performance
(22) As will be shown later, all the mechanical parameters are in theory interchangeable, and so all such measurements will contribute to the understanding of viscoelastic theory.

Show is followed by a long that-clause to introduce a hypothesis that has been demonstrated:

(23) the diagrams for the measurement of roughness show that after a rather rough grinding (used for roughing but not for overfinishing), the ceramic components have a high degree of settling, although they were obtained in ordinary conditions of compressing and sintering.

This verb collocates with *figure(s), data, tables,* etc. usually introduced by the preposition *in* and also appears with percentages:

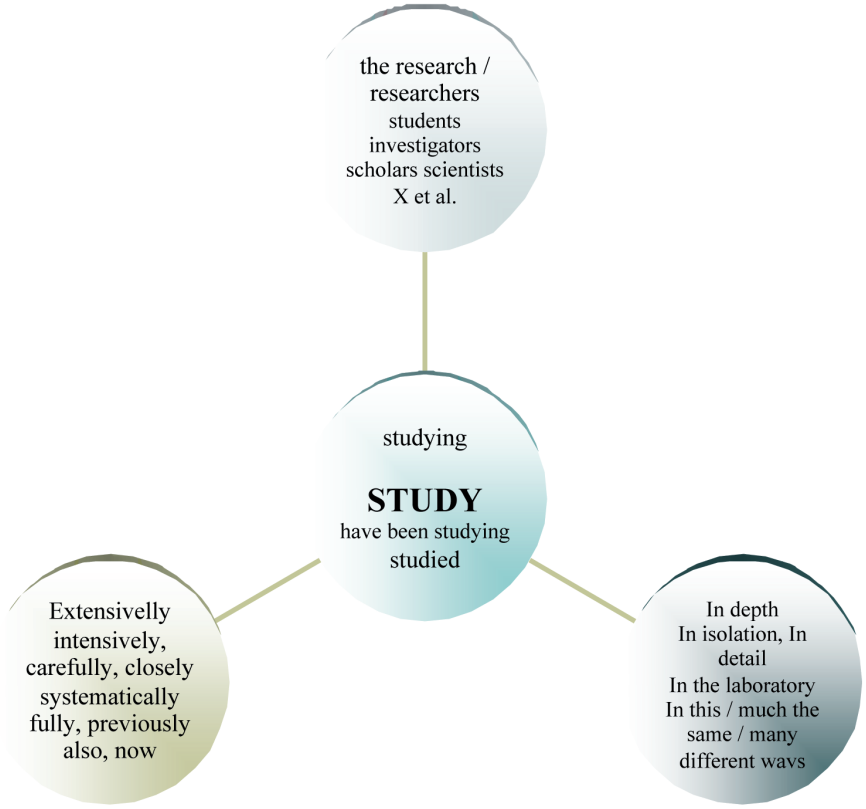
(24) Figs. 9-13 show the microstructure of the
(25) mullite gels show up to 35 % linear shrinkage



STUDY: Objects collocating with *study* are frequently words referring to the characteristics of the materials under examination or their reactions when applying certain techniques or carrying out experiments with them, or the materials themselves: *gravity, properties, thickness, characteristics, behaviour,* etc. Collocates for this verb also include words indicating contrast or comparison such as *relationship, the influence of*. The structure «X was/were used to study Y» is also frequent, and thus a method or a particular equipment (*viscometer, tests, thermogravimetric analysis*) may be used to study something:

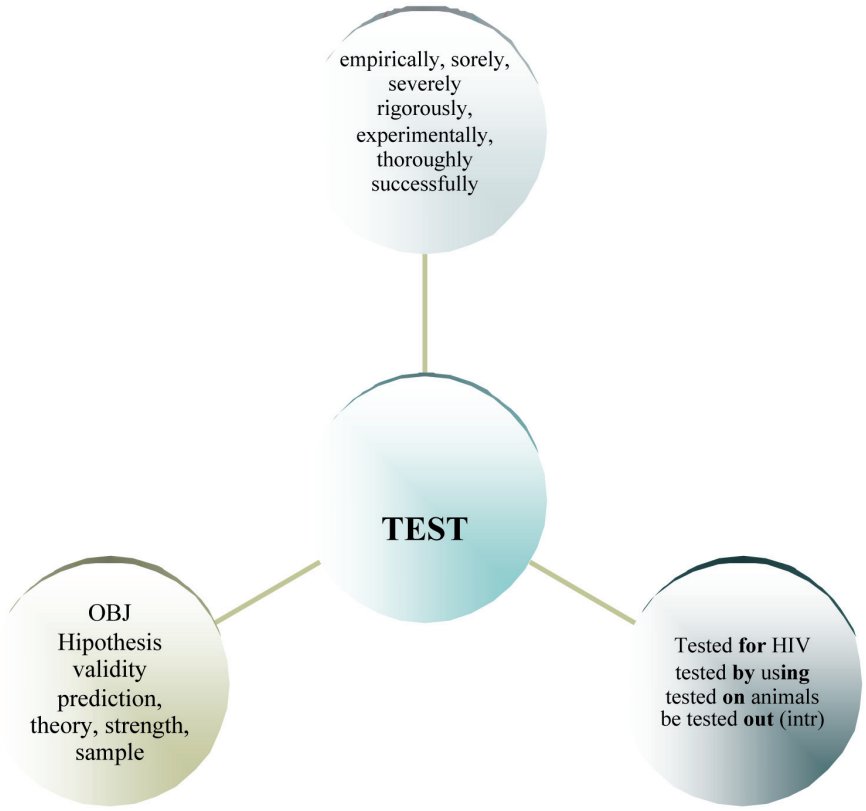
(20) Historically, one of the earliest frequency-locking phenomena to be studied in laser physics was the locking of three or more longitudinal modes.
(21) Acid rain is thought to have damaged 46 of the 56 sites of special scientific interest (SSIs) in the UK studied in research commissioned by English Nature.

(22) Although small, these single crystals can be studied using an electron microscope.
(23) They had all been extensively studied to evaluate the cause of their diarrhoea and the possibility of bile acid malabsorption was studied by the SeHCAT test.
(24) specific gravity was studied. A controlled viscosity was



TEST: The verb *test* collocates with *samples, systems, rate(s), viscosity* and is also found in the prepositional structure *was tested against* (which is a combination used in a domain specific sense: contrast with, and so things are tested against a pattern or a model, or hypothesis are tested against previous experience or experiments):

(25) Then, a combination of samples A and B were tested against a combination of samples B and C.
(26) samples were tested in accordance with the two
(27) desired viscosity was tested. The results suggest that...



VERBS USED TO TALK ABOUT QUALITIES AND PROPERTIES AND **ABOUT SIMILARITIES AND DIFFERENCES**

The verb *measure* expresses how the researcher tries to find out differences or similarities between two things or processes. *Improve* expresses how something is done to correct or make the differences more suitable. *Compare* (*parameters, resistance, temperature, different materials*, etc.), and *develop* would also belong to this type though they are less frequent.

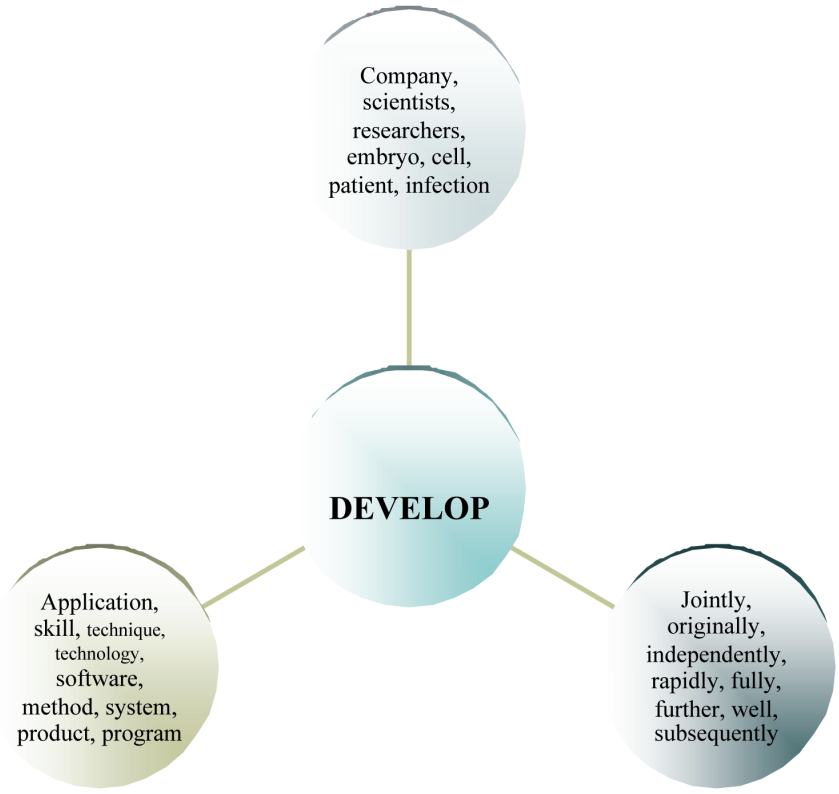
MEASURE: The majority of the objects of *measure* allude to qualities and properties: *concentration*, *density*, *toughness, absorption, thickness, shock resistance, transmittance* and also to quantity, speed and time: *rates, speed, time intervals, velocity, etc.* and space (*angle, cm, distance*):

(24) thicknesses were measured and some of them were
(25) time intervals is measured as a square root function of

Temperature and *pressure* are frequently measured. When the method of measurement is indicated, it is introduced by the words *by/with/using* or by *on* when it is an apparatus; adverbs or adverbials introduced by the preposition *at* are used to express how something is measured:

(26) and prepared bodies measured by X-ray fluorescence
(27) constant was measured on a Hewlett Packard 419A
(28) damage thresholds measured at more than 9 J/cm2 at
(29) samples are being measured simultaneously, it is not
(30) Short wavelengths are measured in millionths of a metre (10 -6; m or micrometre, m) or even billionths of a metre (10 -9; m or nanometre, nm).

DEVELOP: The verb *develop* co-occurs with the following subjects, objects and modifiers. In many cases the objects appear in subject position in passive voice sentences: «Applications can be developed on a single machine».



COMPARE: *Compare* is frequently used in the passive voice and is frequently used to contrast percentages in phrases like «a fall of 21 per cent compared with that for 1989». The use of *compare* when talking about percentages frequently appears in patterns with verbs indicating increase or decrease and with the preposition *with* or *to* introducing the second or next element that is being compared (*fall/rise/increase* X *per cent compared with/to*). In these comparisons we may find adjectives like *small, high* or *low* to talk about the differences in numbers or amount in the things being compared (frequencies of vibration recorded ... were high compared to those of the Lleyn earthquake). In research papers it is also

common to compare *results*, *figures*, *samples* and *data* (results will be compared; compare fig. 3 with figure 4; variation for this sample is compared with that for a branched polyethylene of low crystallinity; by comparing the new data with that for known infrared sources). *Compare* is coordinated with *contrast* since comparison and contrast are an important part in experimental research. In this sense, the word *then* is a recurrent collocate because it introduces the comparison/contrast stage of the process: «The statistical viability of random sampling is then compared with the non or semi-statistical viability of the other two techniques».

IMPROVE: *Improve* collocates with words which are understood as desirable conditions or ends: *efficiency, quality, performance, properties, design, characteristics, behaviour*, etc., that is, good performance, better casting rate, the best quality, and so on. Things may *greatly, markedly, significantly, dramatically,* or *considerably* improve:

(31) requirement, but to improve efficiency of the systems
(32) should be used to improve plant performance. The
(33) fewer fines should improve the casting rate

MAKING AN EVENT POSSIBLE, CAUSING OR CREATING SOMETHING
The researcher or the characteristics of the material under examination do something to bring about an event or state to make it possible: *make, achieve, allow, permit, cause, lead to*.

ALLOW and PERMIT: It is interesting to contrast the use of *allow* and *permit*. There is a tendency to use *allow* but not *permit* in the passive voice followed by an infinitive. With the infinitive it implies that no external action affects the materials during the process:

(34) the parts were allowed to cool for 30 s prior to
(35) The feedstock was allowed to mix until the torque

Both *allow* and *permit* may be used to express that things or experiments are carried out without any difficulty. The agent that collocates with *permit* or *allow* in this sense is usually formed by words or phrases like *analysis, comparison of... , collection of (much) data, measurements*:

(36) These data allow the absorption and saturation ...
(37) ... the better definition of the new method permits a better fit for the absorption...

the object may be words like *characterization, control, study* or words referring to positive results like *successful processing, optimization of process:*

(38) (a supply in) the contact container permits control of the water level

ACHIEVE: Collocates with objects (or subjects when the passive voice is selected) like *remission, objective, goal, aim, result* and those that denote a positive degree or quality: *full density, high precision/quality, uniformity, the desired powder-loading, success, improvement,* and also with words like *rate, parameters, (viscosity) target, phase:*

(39) powder was added to achieve the desired powder-loading
(40) full density was achieved in all cases. The high levels
(41) saturation phase was achieved at 3.1 min, and, in this

The way or method through which something is achieved is frequently introduced by the preposition *by* collocating with nouns like *combination, use, selection, means, method* or *technique* as in: all of these properties can be achieved by the use of other chemicals.

CAUSE: Usually collocates with negative words as is the tendency for this verb in the English language (see Stubbs 1995:247). The collocates for *cause* in our corpus are related to the (bad) quality of the materials or to inadequate methods to obtain or process them (*damage, pollution, disease, cancer, difficulty, reduction, death, concern, loss, pain, substantial/greater proportional loss, multiple errors, worsening, damage, unreliable measurement, contamination, defective drying*):

(42) of the processes that cause porous building material degradation
(43) Both differences probably were caused by a greater proportional loss of water

Modifiers indicating probability (or repeated cause of the problem) introduce the reason why the problem is caused: *probably, in part/partly, mainly, rarely, possibly, often, usually*, etc. as in: «theophylline probably causes redistribution of potassium into cells».

LEAD to: is followed by nouns which are modified by adjectives indicating some kind of degree or mode: *decreased, reduced, faster, high(er), significant, large, catastrophic, continuous, spontaneous.* The nouns these adjective modify usually refer to some kind of change in a material or a process: *formation, cracks, transformation, breaking, increase*, etc.:

(44) size which ultimately lead to cracks on the surface or in
(45) tools. This ultimately leads to a significant increase in the
(46) characteristics which lead to a decreased performance are

PREPARE: Prepare collocates with the prepositions *from, with, at, through* and with nouns like *slip, slurry, etc.*

(47) Suspensions were prepared at 50% solid added pieces of
(48) Composites can also be prepared from mullite ZrO2 glass
(49) of the slurries prepared under industrial conditions
(50) Slips were prepared using specific formulas and

PRODUCE: *Produce* is used to express the result of a process as an end or as an improvement or change in comparison to the previous state: *a significant increase, satisfactory slips, an important quantity, coarser particles, sanitaryware*, etc. The preposition *by* introduces a method or process:

(50) was too porous to produce satisfactory slips for actual
(51) reaction sintering produces coarser ZrO2 particles than
(52) Powder A is produced by the carbothermal reduction process

VERBS EXPRESSING MANIPULATION AND CHANGE
Some verbs are used to express that an agent manipulates something so that it is changed to some extent. Verbs belonging to this semantic type are: *make, heat, cool, quench, sinter, cast, dry, increase, decrease, reduce, mix, cut, mill,* etc. Only the most frequent are discussed here.

MAKE: has a causative sense in examples where the object is followed by an adjective (frequently followed by another verb in the to-infinitive form:

(53) These attributes make **AIN** an attractive material for
(54) of these parameters makes **it** possible to relate them

With the preposition *of* (indicating composition) or *from* (indicating source), *make* has the sense of producing by putting materials together, manufacture:

(55) components were made from this recycled feedstock
(56) The component is made of aluminous ceramics

Make may collocate with words like *comparison, test, components, observations, test samples, etc.* and in the same sense (though not as frequent as *make*) we find the verb *perform* collocating with *tests, studies, method:*

(57) Comparison was made between the new and standard
(58) types of tests were made: Comparison between the new
(59) The tests were performed in an Instron machine with

USE: For *use*, something is manipulated to change or develop something else. Words like *method, tests, system* and words denoting different *materials* are the usual collocates functioning as the subject of *use*:

(60) The same method was used for the analysis of the

The gerund, *using*, frequently introduces a method, a machine, or an equation:

(61) were measured using the Hitachi Colour Analyzer

Used is followed by *to* introducing a specific activity (*compare, determine, describe, form, obtain, represent, study*). It is followed by *for* to indicate a purpose and is followed by a gerund or a noun and the preposition *of:*

(62) the Biot number is used to represent the heat transfer
(63) transducer was used to compare the energies applied
(64) the water can be used to control chemical and physical
(65) method was used for calculating the fractional
(66) casting is also used for the production of wash

The prepositional phrases *in comparison, in (the) production (of), in X calculations, in this paper/study* collocate with *use* and follow it:

(67) This is especially used in production of WC models. The
(68) strength was used in R calculations.

Used is preceded by modifiers like: *widely, commonly, extensively, currently, only, also* and *successfully*.

HEAT: collocates with the preposition *in* to introduce the place where the heating process is carried out:

(69) on all sides, were heated in a vertical tubular furnace

The prepositions *to* and *at* introduce temperature and time: AT + ºC/min + TO + ºC:

(70) Y203 samples were heated at 2.5°C/min to 1835°C.

The noun appears in the collocations: *rapid heating, infrared heating, heating rates, cooling or heating* and with prepositions like *during.*

MIX: This verb may appear with words like: *constituents, feedstock, slip, powder*. The syntactic structure «mixed at (a solids loading of x vol. % / 180rpm) at 120 ºC» appears frequently in the co-text of *mix*:

(71) constituents are not mixed and stirred well, then the size
(72) The feedstock was mixed at 180 rpm at 120°C. Initially

DECREASE and REDUCE: In the present tense, *decrease* and *reduce* show preference for the use of different syntactic patterns For *decrease* the thing that diminishes is the subject, for reduce it is the object: X decreases / Y reduces X.

(73) Green bulk density decreases as the chain length and
(74) ware and, thus, reduce the number of rejects

Frequent collocates for decrease and reduce are words related to the quality of the material or process: *performance, density, gravity, (impurity) levels, contamination, wear:*

(75) impurity levels can be decreased, which should lead to

INCREASE: Words preceding the verb *increase* may be related to quantity or strength, weight, volume or value: *concentration, pressure, mass, density, size, value, number*. The words following increase usually refer to some kind of process: *production, powder loading, conductivity, reexpansion*. Adverbs indicating degree may also follow the verb *increase* (e.g. *significantly*). When the starting and final point of the increase are quantified, prepositions *(from) - to,* and the expression *up to* are used:

(76) grain size also increases from 3.11 to 3.25
(77) have continued to increase the thermal conductivity of
(78) with PVA binders increase significantly

VERBS USED TO DEAL WITH DATA AND INFORMATION
Obtain, present, provide, require, represent. In a give and take process information is obtained or provided while problems are presented or «present themselves». (See also verbs of perception above: *show, calculate...)*

OBTAIN: Collocates with words related to numerical information: *results, data, coefficients, equations, information, etc.* and words related to some material quality: *density, absorption, etc.*

(79) data can easily be obtained experimentally

Prepositional syntactic structures with *by* (indicating method) and *from* (indicating source) can be seen in examples like:

(80) The equations are obtained from simplification of the
(81) effects can be obtained by sintering at different

PRESENT: This verb collocates with: *problems, difficulties, a few cases, cracks, etc.* When used with the preposition *in*, it introduces figures, *at* is selected for meetings:

(82) (over 1.5 mm), even presenting cracks. In Table 2, the
(83) from alkoxide often presents problems due to the

(84) is based on a paper presented at the American Ceramic Society Convention
(85) is 0.994. The results presented in Table 4 and the

PROVIDE and REQUIRE: *Provide* collocates with some kind of data allowing a better understanding of a problem (*an example, information, some understanding, an easy solution, accuracy):*

(86) ensembles would provide more information as to the

or with words indicating some quality that is required (*densification/density, strength, absorption coefficient, the required pressure*):

(87) molecular weights provide higher green strength when...
(88) processing, which provides molecular level homogeneity
(89) to approxi. 1375 °C, providing sintering resistant pore materials

a common phrase is *provided in solution X:*

(90) Wacker) had been provided in solution (50 wt%) by the

Require is used with *in* to indicate a stage or phase; with *to* and *for* to introduce an end:

(91) precise control is required in every production stage
(92) homogeneous mixing is required for consistent feedstock
(93) and research are required to compare the performance

Require is used in the passive voice when something has to be done to the subject (*time, experience, conditions, a few castings*) or is needed so that an aim is achieved:

(94) a few castings are required, seems to be the biggest

REPRESENT: The verb *represent* is used to exhibit or perform different kinds of (image) information provided in the articles. It is used to show a thing, to depict some kind of data, to exemplify, and collocates with *figure, table, data, parameter* and *slope, peak, broken lines, curves, etc.*:

(95) and broken lines represent body (C) with 0.96 mm and
(96) and R parameter is represented in Fig. 1 which shows
(97) Solid lines represent transmittance curves of body A

PROCESSING INFORMATION

There is a lot of information in the language use section above. You are advised to read it thoroughly. As a way to understand and remember how these verbs are used, you may try to write sentences using those verbs and their collocations. Try to write five sentences each week using data provided in this unit. Keep doing so until you no longer need to go to the section above to write your own sentences.

Exercise 1. Complete the missing words using the clues:

In an experiment d_ _ _ are observed

information is obtained
pro_ _ ded

Values and parameters are det _ _ _ _ _ ed
repr_ _ _ nted

via / using equations

coefficients are
- c_ l _ _ _ _ _ _ ed
- obt _ _ _ ed
- ob _ _ _ _ ed
- shown
- co_ _ _ dered

and results are pres_ _ ted

Exercise 2. Complete the following sentences using prepositions:

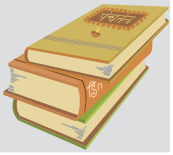
1. Samples were heated __ 2.5ºC/min __ 1835ºC. (at, to)
2. Thermal conductivities could be further improved __ optimizing the sintering cycle. (by)
3. Parameter Rt was calculated ___ equation (1). (via)
4. Composites can also be prepared ____ mullite ZrO2 glass powder. (from)
5. The feedstock was mixed __ 180rpm __ 120ºC. (at, at)

Exercise 3. The following words and phrases describe products/materials. Write each quality under the verb they may usually appear with. Some of them may appear under more than one verb:

good quality substantial loss contamination
unreliable measurement the desired quality damage problems
an improvement viscosity target impurities cracks
defective drying uniformity optimization of process

CAUSE	ALLOW	PERMIT	PRESENT	ACHIEVE	OBSERVE

FINDING INFORMATION: DICTIONARY USE



HOW WOULD YOU PRONOUNCE THE FOLLOWING WORDS? USE AN ONLINE DICTIONARY TO FIND OUT IF YOUR PRONUNCIATION IS CORRECT.

1. oxide _____
2. thick _____
3. author _____
4. photograph _____
5. completed _____
6. defined _____
7. heat _____
8. modification _____
9. those _____
10. heat _____

You may want to use http://www.cooldictionary.com/pronounce.mpl
Or any CD or online dictionary that includes pronunciation.

COMPOUND WORDS

Listen (open your ear) and decide which are the missing words or phrases. Your teacher will read the text.

Source: ***American Society For Technion - Israel Institute Of Technology (***http://www.technion.ac.il/***)***

Date: Posted 2/25/2002

Plastic LEDs Break Telecommunications Barrier; Widespread Applications In Fiber Optics Possible

HAIFA, Israel and NEW YORK, N.Y., February 22, 2002 –

In the past few years, _____ (plastics) that emit _____ light have stirred excitement with the prospect of inexpensive, flexible products. But the huge optical telecommunications market seemed _____ to these new _____ _____ because the plastics could not emit efficiently in the ___-_____ (near IR) band where the optical fibers that carry the communications are most transparent.

In today's Science, Dr. Nir Tessler and his team at the Technion-Israel Institute of Technology in Haifa, together with Uri Banin and his team at _____ University in Jerusalem, announce a way to ___ polymers to emit _____-___ radiation by incorporating tiny nanocrystals in the polymers. Once commercialized, such nanocrystal _____ could potentially cut the costs of the hundreds of millions of _____ _____ needed to bring _____ optic communications to individual homes, opening the family doors to global networks.

Polymer _____-_____ diodes (LEDs) are much cheaper to make than conventional solid state LEDs and lasers. In the conventional devices, materials are laid down in a vacuum and _____ __ _____ through a patterned mask. Then part of the layer is removed by acid in a _____, _____-____ process. But because polymers are soluble in various solvents (organic solvents, _____, _____), polymer layers can be sprayed onto materials with ___-___ printers, forming devices as the solvent evaporates in a much simpler and cheaper method. Visible light-emitting polymers already are being incorporated into products ranging from flat panel displays to infant mobiles.

Many of the missing words in the text above are compound words which are formed using a hyphen to join two words or a prefix or suffix to a word.

1. Write a list containing all the hyphenated words in the text and the words they modify.
2. Can you find any other compound words in the text without hyphens?

Some prefixes are very productive when it comes to forming new words. Think of words beginning with super- or hyper- such as hypermedia or superhero. The prefix cyber-, as in cybernetics and cyberspace is becoming a favourite one. Its meaning is «relating to computers, especially the Internet». Look at the following words and their definitions:

Cybercitizen: user of the WWW

Cybercaster: person broadcasting information (like sports updates) on the Internet.

Cybercrat: Internet enthusiast

Cyberdetective: Police officer tracking down suspects of Internet crimes

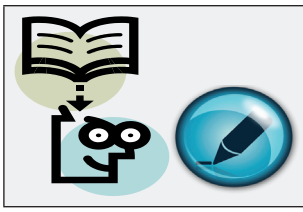
Cyber-dino: computer animated dinosaur (Spielberg's cyber-dinos)

A number of words refer to personal relationships which are carried out on the Internet:

A cyber-romance is a love affair conducted on the Internet

... and the partners in that affair are called «cyber-sweetheart», «cybersweetie» or «cyberlover». A male partner is also called a «cyber-Romeo». Likewise, a female partner in an adulterous relationship is called a «cybervamp» (no male word for the same concept, only cyber-Romeos exist!?...).

Individuals may be helped online or they may be attacked, and so may countries or enterprises. That is why we may talk of getting help online («cyber-help») and we may also talk of «cyber-safety», «cyberlaw» and «cyberattacks».



ORGANISING YOUR IDEAS: WRITING DEFINITIONS

Could you put forth a definition for the following words?

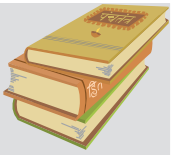
cybercar
cybertrend
cyberbabe
cyberego
cyberprofile
cyberbullying
cybercash
cyberhermit
cybercad

ORGANISING YOUR IDEAS: WRITING

OPTION 1. What is your opinion about chatting or cyber-flirting on the web? Write a short essay explaining your opinion about it. Use some of the words discussed in this lesson.

OPTION 2. Imagine you want to create a company that provides online help. Describe what your cyber-help is about. Who are your potential clients? How can they benefit from your services? Which are the advantages of cyber-help as opposed to other helping procedures? Are there any disadvantages?

FINDING INFORMATION: DICTIONARY USE



You will now work with the following specialised dictionary:

General Chemistry Online
http://antoine.frostburg.edu/chem/senese/101/index.shtml

Here you may find information about chemical terms with audio pronunciation.

Click on the Glossary link *Consumer chemistry* and find the word «caffeine». The loudspeaker symbol provides pronunciation. The molecule symbol will give you more information about that substance. What are the uses of caffeine? Have a look at the notes and click on *More*.

What's the meaning of «critical temperature»? Which symbol is used for it? How do you pronounce it? There are other articles here about coffee: read as much as possible and be ready to prepare a spoken presentation in class about this topic.

Terms in this glossary may be accessed alphabetically or by topic.

How many different topics are listed here? Are there any more links to other chemistry-related dictionaries? In which two ways can you find the definition for «boiling point»?

☺ In the following chunks, the preposition IN has different uses. Put the number of the examples in the boxes below according to the way IN is used in the sentence:

CHUNK: A large amount or portion of something (*informal*). A chunk is a part of something, esp. a large part: Ex.: a chunk of text; a substantial chunk of our profits

In computers**:** (n.) A block of a type of data used in Tagged Image File Format (TIFF) and Resource Interchange File Format (RIFF) standards.

1. ...been used by terrorists to kill people. **In** 1995, the group Aum Shinrikyo released...
2. ...th the chemical VX, a nerve toxin). But **in** 1995, the group Aum Shinrikyo released...
3. ...manure contain bacteria that are deadly **in** a variety of ways. In the 19th century...
4. ...n. A chemical or biological weapon used **in** a large city would kill thousands of p...
5. ...people who catch the virus die from it **in** about two weeks, and there is no good...
6. ...first chemical weapon used effectively **in** battle was chlorine gas, which burns a...
7. ...: «Executive Orders» and «Rainbow Six». **In** both books, the source of infection is...
8. ...spraying a fine mist along city streets **in** crowded areas. Small bombs or aerosol...
9. ...bombs or aerosol canisters are released **in** crowded areas like subways, sports are...
10. ...a chemical to control aphids, you are, **in** essence, waging a chemical war on aphi...
11. ...isease has recently been a huge problem **in** Europe. Spreading the disease to the U...
12. ...xin, and this toxin is deadly to people **in** incredibly small quantities (as little...
13. ...f them use the sorts of chemicals found **in** insecticides. When you spray your lawn...
14. ...nd grenades and landmines, and they die **in** large groups because of cannons, bombs...
15. ...n inhibits the release of the chemicals **in** nerve cells that cause muscle contract...
16. ...t they must be given prior to infection **in** order to work. Botulin toxin - Botulin...
17. ...nd a gas mask at the time of the attack **in** order to be protected. Feared Biolo...
18. ...of chemical and biological weapons used **in** random attacks on innocent civilian po...
19. ...cals that are extremely toxic to people **in** small quantities. The most commonly fe...

20. ...cal weapon uses a bacteria or virus, or **in** some cases toxins that come directly f...
21. ...til it was controlled with vaccinations **in** the 20th century. It has been eradicat...
22. ...stroys lung tissue. About 10 milligrams **in** the lungs will kill a person. Lewisit...
23. ...rikyo released sarin gas, a neurotoxin, **in** the Tokyo subway. Thousands were wound...
24. ...nteresting paradox when it comes to war **in** the modern world. Anyone who has exper...
25. ...exploding cannisters to release the gas **in** the subway. Biological Weapons A bi...
26. ...a that are deadly in a variety of ways. **In** the 19th century, American Indians wer...
27. ...ne extensive research on these weapons. **In** the wake of the September 11 terrorist...
28. ...- VX is very similar to Sarin. It works **in** the same way, but is more toxic. One m...
29. ...t to manufacture, and about 1 milligram **in** the lungs will kill a person. VX - VX...
30. ...group Aum Shinrikyo released sarin gas **in** the Tokyo subway, wounding thousands a...
31. ...plored the idea of biological terrorism **in** two books: «Executive Orders» and «Rai...
32. ...the movie The Rock featured a scenario **in** which terrorists tried to launch a mis...
33. ...xist. Chemical weapons were first used **in** World War I, and the nations of the wo...

To introduce time	
To express a point of view	
To introduce space or place	
To express manner or the way something is done	
To introduce amount or number	
To express finality or purpose	

Word study

1) Word-building. Complete the phrases with a proper noun form:

geology is a _____
mathematics is a _____
sociology is a _____

A person who studies and applies _____ is a chemist
engeneering is an _____
_____ is a doctor
_____ is a psychologist
agronomy is an _____
_____ is an ecologist
statistics is a _____
biology is a _____
criminology is a _____
educational methodologies, learning
and teaching techniques is a_____

2) Form nouns from the following verbs:
to imagine, to attract, to direct, to construct, to connect, to relate, to fluctuate.

3) Form verbs from the following nouns:
conversion, suggestion, production, definition, operation, reduction, population, observation, application.

4) Find words which mean approximately the same:

FALL	D_ _ P
ENTIRE	W _ _ _ E
USUALLY	F _ _ _ _ _ _ _ _ Y
WIDELY	E _ _ _ _ _ _ _ _ _Y
LASTLY	F _ _ _ _ _ Y
KIND, SORT	T _ _ E
SIMPLER	E _ _ _ _ R
DISCOVER, FIND OUT	D _ _ _ _ T
IN THE PLACE OF	I _ _ _ _ _ D OF

5) Find words which mean approximately the opposite:

SHALLOW D_ _ P
TO LOWER R _ _ E
TO RISE F _ _ L
DIFFERENTIATED U_ _ I _ _ _ _ _ _ _ T _ _
HIGH L _ W
TO SUCCEED F_ _ L
IRRELEVANT R _ _ _ _ _ _ T
TO INCREASE D _ _ _ _ _ _ E

6) The suffix -ion/-ation/-ition: process or result of doing something: operation = the process or result of operating

What is the name for:
- the process or result of adding
- the process or result of subtracting
- the process or result of dividing
- the process or result of multiplying

Definitions

1) Try to define the following words. While trying to provide a definition, you should be aware of those words you need and do not know which might be helpful (e.g. device, instrument, used for, employed, etc.):

Engine

Bicycle

Thermometer

Mill

Watermill

Leak

Deforestation

Drier

Hair Drier

2) Have a look at the following groups of words. In each group the words are somehow related. Try to explain the differences among the words in a group:

Group 1)
REASON, CAUSE, EXPLANATION, GROUNDS, MOTIVATION, PURPOSE

Group 2)
BAD, DAMAGING, SERIOUS, DANGEROUS, HARMFUL, TOXIC, TERRIBLE, REPULSIVE

Group 3)
POLLUTE, POLLUTION, POLLUTANT

Group 4)
PRODUCE, PRODUCER, PRODUCTION, PRODUCTIVE, REPRODUCE, REPRODUCTION, PRODUCTIVELY, UNPRODUCTIVE

In the following two groups provide an example for each verb and particle combination:

Group 5)
GO: GO DOWN, FOR, INTO, OFF, OUT, UP

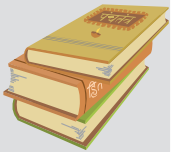
Group 6)
PULL: PULL AWAY, DOWN, IN, INTO, OFF, OUT, OVER, UP

In the following two groups try to use a picture dictionary or online drawings and pictures and with the help of the pictures explain the difference among the different words:

Group 7)
SAW, SPANNER, HAMMER, CHISEL, FILE PLIERS, MALLET, DRILL, CHAIN SAW, MALLET

Group 8)
PLUG: TWO PIN, SQUARE PLUG, ROUND PIN, SOCKET, PLUG-IN

FINDING INFORMATION: DICTIONARY USE



Cambridge Dictionaries Online. http://dictionary.cambridge.org/
Collins English Dictionary On-Line. http://www.collinsdictionary.com/
Longman Dictionary of Contemporary English. http://www.ldoceonline.com/
Macmillan Dictionary and Thesaurus. http://www.macmillandictionary.com/
Oxford Dictionaries Online. http://oxforddictionaries.com/

Use the online dictionaries listed above to answer the questions about the words and lemmas that appear below:

Chemist

1. Is it a person or a place?
2. What sort of things are sold at a chemist's?
3. What does a chemist study?

Adjudicate

1. What sort of people adjudicates something?
2. What is it that they adjudicate?
3. What do you know about the grammar of this word?
4. What do dictionary entries tell us about the circumstances in which adjudication typically takes place?

Rule out

1. What kinds of things are ruled out?
2. Why do you rule out things?

Break up

1. What kinds of things do you think may break up?
2. What happens when the school breaks up?
3. Does the noun break-up have any relationship with the seasons?

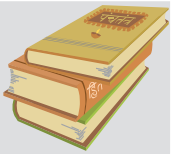
Grow out of

1. What kinds of things do you grow out of?

Bring up

1. What is the typical subject of bring up?
2. What kinds of things and people are brought up? Does the meaning of the verb «bring up» change according to the subject or objects they go with?
3. Find the information for *rule out*, *break up*, *grow out of* and *bring up* in a CD or paper dictionary. Is the information you found there different to the online information for the same publishing houses?

FINDING INFORMATION: DICTIONARY USE



Aims) Definitions: what should be expected from dictionary definitions? Students compare their own definitions with dictionary entries.

Procedure) Worksheets: students are handed in worksheets where they have to define words. For each word they are given two blank spaces. In the first space they shall try to define a word working in groups. This first definition is then discussed among groups. Then students note down the dictionary's definition and compare it with their own definition analysing the differences and stating what was good and bad about the definition they gave and why. Note that different groups may be working with different dictionaries.

Card:

Postcard:

***Chemistry*:**

***Liquid*:**

Tile:

Walk:

Walk in:

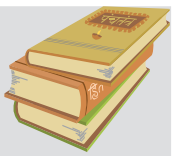
Run:

Jump:

***Melting point*:**

***Freezing point*:**

FINDING INFORMATION: DICTIONARY USE



Aims) Make students aware that words have «friends» too, they appear frequently with certain other words. Words may change their meaning when they appear next to other words. You are advised to use paper dictionaries or Macmillan Dictionary online.

TAKE, WHAT a verb!

In the following table you are given clues of how the verb «take» behaves. Try to fill in the missing information using your dictionary:

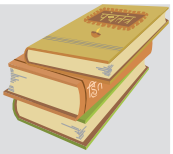
1 (MOVE)
2 (UNDERSTAND)
3 (GO WITH)
4 (ACCEPT)
5 (LEAVE)
6 (HOLD)

TAKE		
1		
	C	
		X

A) I held out my hand and she took it
B) I tried to telephone him but he refused to take my call
C) Rain is forecast, so take your umbrella when you go out
D) I had to read the letter twice before I could take it all in
E) She only took it out on me because she was tired and disappointed
F) The plane took off at 8:30

U. To move in order to hold something in the hands
V. To receive willingly
W. To leave suddenly, leave the ground and fly, depart
X. To understand the meaning and importance of something
Y. To go somewhere with someone
Z. To move something or someone from one place to another

FINDING INFORMATION: DICTIONARY USE



When using a dictionary, it is very important that you learn how to differentiate word senses. Remember that the same word may have different meanings depending on the context it is used in.

Use the Cambridge Online Dictionaries (http://dictionary.cambridge.org) for the following task:

Read the anonymous poem below.

Some of the words are underlined. These words may have a general meaning and a specific meaning when used in computer texts. Use the dictionary to find a general definition of the word and a specialised (computer) definition of the same word.

What is a cursor? You probably know its meaning in computer texts since the same word is used in Spanish. Use the dictionary to decide what does the poet mean when (s)he says «a cursor used profanity».

What is the meaning of «log on» as used in the poem?

Remember when . . .
A computer was something on TV
From a science fiction show,
A window was something you had to clean
And a ram was a cousin of a goat.

...

An application was for employment
A program was a TV show
A cursor used profanity
A keyboard was a piano.

Memory was something you lose with age

...

And if you unzipped anything in public
You'd be in jail for a while.

Log on was adding wood to a fire
Hard drive was a long drive on the road

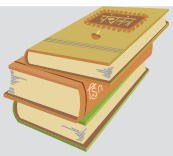
...

a web was a spider's home
and a virus was the flu.

I guess I will stick to my pad and paper
And the memory in my head
I hear nobody's been killed in a computer crash
But when it happens they wish they were dead.

(Anonymous poem in *American Speech* 74.3 (1999) 299-230 «Among the New Words»)

FINDING INFORMATION: DICTIONARY USE



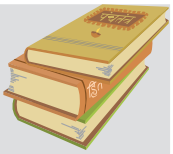
What is the **difference** between **timber** and **wood**?

Read the following examples with the words «timber» and «wood» and say in which ways they are used differently. Then look up the definitions in the Webster's online dictionary (Webster's 1828: http://www.christiantech.com/, http://1828.mshaffer.com/).

- These are industrial processes carried out only to order unless the use of 'treated' timber in the rebuilding is specified from the outset.
- There was no effective management of the woods for profitable timber production, and regeneration was prevented because the young shoots were eaten by the deer and by commoners' cattle, which roamed the forests at will.
- Tree removal in such a system, as occurred in the 1607-1900 period of US history, will inevitably lead to forest demise, but if the ecological system is carefully managed there are large-scale opportunities to reap a timber harvest without jeopardising sustainability.
- Lime was particularly good for coppicing and its timber prized for turning, furniture making and much used in coachwork.
- The greatest demand on timber was for industry.
- Lots of shrubs have wood and they're not trees.
- Have you tasted tea made with water boiled over a wood fire, Miss Telford?
- These oils have long been the principal constituents of paintsand varnishes for protecting and beautifying the surfacesof wood and metal.
- He leaned his head against the wood paneling behind him,
- Some people can carve most anything out of a piece of wood. Some make beautiful chairs, cabinets, chests, doll houses, etc.

↘ Which differences did you see? How does the dictionary define these words? Underline or highlight the words/phrases in the examples which show the typical contexts in which «timber» appears.

FINDING INFORMATION: DICTIONARY USE



Have a look at the free online dictionaries listed after the questions below and then answer the following questions:

1. How would you classify the dictionaries according to type?

2. List the different kinds of information you have seen in them

3. State what would you use each of them for and/or in which situation. Is there any of these dictionaries you would never use? Why?

4. Which of the dictionaries you have seen do you like better and why?

AllWords.com - English with Multi-Lingual Search - includes translation (English, German, Dutch, French, Italian, and Spanish), definition (English), sound pronunciation, synonym, example phrase. In this dictionary you can listen to the pronunciation for the words by clicking on the word or on the loudspeaker icon.
http://www.allwords.com

Cambridge Dictionaries online includes five dictionaries in which you write the word(s) and the next screen summarises the possible senses of that word(s). Thus, if you write «mouth» body part opening. Clicking on one sense will give you all the information available for that sense, which includes pronunciation, grammar, definition and examples. Idioms may be searched either giving the complete idiom or by introducing one of the words appearing in the idiom. Thus, if you introduce «hand» in the idiom dictionary, it will take you to the following entries: *to know something like the back of your hand, a bird in the hand, be a dab hand, the dead hand of something, can count something on the fingers of one hand, first hand, the hand that feeds you*, etc. In the phrasal verb dictionary you may find information by looking for the adverb or preposition or by looking for the verb+adverb or preposition. You may also enter one verb to see which adverbs or prepositions go with it.

Cambridge Dictionaries Online. http://dictionary.cambridge.org/
Cambridge International Dictionary of English
Cambridge Learner's Dictionary
Cambridge Dictionary of American English
Cambridge International Dictionary of Idioms
Cambridge International Dictionary of Phrasal Verbs

Eric Weisstein's World of Science

http://scienceworld.wolfram.com/

Includes four encyclopaedias of astronomy, chemistry, mathematics, physics and scientific bibliography. For each of these specialties you may go to the alphabetical index or use the browser for the whole site. Each entry is hyperlinked for those words included in the different encyclopedias.

Many sample sentences from specialised sources, definitions, audio pronunciation. If you look up the word «element», for instance, you will get its pronunciation, definition, specialised definitions (i.e., meaning in specialised fields of knowledge) and examples. And you will also have access to the entry for «element» in the American Heritage Dictionary 4. Moreover, information is given on synonyms, links to other specialty dictionaries (e.g. culture, medicine, and science), word phraseology, sample sentences and quotes, and even images related to the word. You are also addressed to related articles on the topic.

Maths spoken here. An arithmetic and algebra dictionary.

Lessons and information on specific topics in mathematics. Includes drawings and formulas. Look up the word «exponent» to get an idea of the content of this dictionary.
http://www.mathnstuff.com/math/spoken/here/1words/words.htm

GreenFacts Glossary

Facts of health and the environment

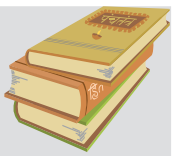
http://www.greenfacts.org/glossary/

This is an online publication that includes a glossary containing definitions, images, related words, translations, and related publications. You may also access its contents thematically and through the publications list. If you go to the glossary and look up «acid rain», for example, you will have a clear idea about the contents of this glossary.

Specialised dictionaries

Go to http://www.elsevier.com/homepage and search for «dictionaries». The results of this search may be interesting for your future as you may decide to purchase one of these dictionaries to use as an aid in your future job or in order to help you read in English throughout your studies. You will get more than 200 hits. Among them, try to organise examples providing your own typology (date, institution, author, content, language...). Try to find at least 5 different categories.

FINDING INFORMATION: DICTIONARY USE



COLLINS ENGLISH DICTIONARY ON-LINE
http://www.collinsdictionary.com/
****

1. What does the word «laboratory» mean?

_____

2. Which is the grammar/syntax of the verb «cast»? _____

Write your own example with this verb:

_____

In the example, which part of the sentence is the verb and which the object?

_____

Can you put it in the passive? If so, how?

_____

3. How would you pronounce the past participle of «dig»?

_____

4. Write a sentence containing the verb «set up» and another sentence containing the verb «carry out». Then, translate your sentences:

4.1. _____
_____

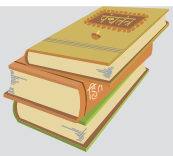
4.2. _____
_____

5. Find an example in the dictionary containing the word «over» with the meaning of completely finishing an activity: _____

6. Find the pronunciation for «thermal» and write it down.
Thermal _____
Without clicking on the loudspeaker symbol, try to pronounce the word. Then listen to it to see if you interpreted the phonetic symbols correctly.

7. What did you like about this dictionary? Anything you did NOT like?

FINDING INFORMATION: DICTIONARY USE



MERRIAM WEBSTER DICTIONARY
http://websters.searchopolis.com/
****

1. What is to «fire»? And, what does «firing» mean in a chemistry context?

_____

_____

Can you find a synonym for «firing»? _____

2. What does «tattered» mean in: «tattered older leaves can be removed after they break»?

_____

_____

Find 3 synonyms for «tattered» you could use in the sentence above: _____

_____

3. What is a «sample»? _____

_____

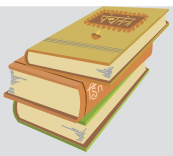
4. What is to «put off» something? Find a synonym.

5. What did you like and what did you not like about this dictionary?

6. What does the word «biscuit» mean in a ceramics context?

7. What do you think about this dictionary?

FINDING INFORMATION: DICTIONARY USE



MACMILLAN DICTIONARY
http://www.macmillandictionary.com/

**********COME FLY WITH ME**********

1. What do you know about the word «fly»?

2. How many different meanings does the verb «fly» have?

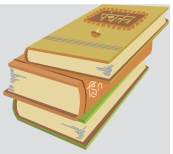
3. How many different meanings does the noun «fly» have? Does the noun «fly» have a plural form «flies»? What does it mean?

4. Can you see other entries in the dictionary containing the word «fly»? Where?

5. What is the meaning of «fly-by-wire»?

6. Use the Thesaurus to find out the meaning of the adjective «fly». Can you find at least 4 synonyms? Write down here one that you didn't know.

FINDING INFORMATION: DICTIONARY USE



****

Decide which words from the texts below you would look up in a dictionary. Underline these words. Try to find them in on-line dictionaries. Write each word form you looked up, the dictionary you looked up and the results (found, not found).

Text 1:

Duckweed Aquaculture--A New Aquatic Farming System For Developing Countries,

by Paul Skillicorn, William Spira and William Journey. The World Bank, 1818 H Street NW, Washington, D.C. 20433, 76 pp. 1993.

Duckweed species are very small floating freshwater plants, and include about 40 species of *Lemna, Spirodela, Wolffia* and *Wolffiella*. They are the smallest of all flowering plants. They are found world-wide and often grow in mats on still, nutrient-rich water.

Duckweed can have a protein content of 35 to 45 percent and a fiber content of 5 to 15 percent, percentages which are similar to soybean. Because «the nutritional requirements of fish appear to be met completely in ponds receiving only fresh duckweed», the plants are used as feed for the culture of carp and other edible fishes. Studies indicate that duckweed is also suitable for feeding to poultry.

This book is a review of the literature, presenting the basics of duckweed farming, and including sections on the biology of duckweed, duckweed farming, duckweed-fed fish production, economic and institutional issues, duckweed-based wastewater treatment systems, alternative uses for duckweed, future research and bibliography.

Text 2:

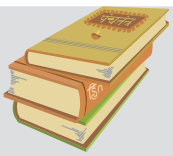
AQUATIC PLANT MANAGEMENT DECISION MAKING
S.H. Kay

The presence of plant life is desirable in aquatic habitats. Algae and aquatic macrophytes are the basis of the food chain. They provide food for small animals, which in turn become the food for successively larger animals. Plants also provide shelter and breeding habitat for a wide variety of animals including fish, waterfowl, and aquatic mammals. Consequently, the maintenance of a good balance between vegetation and other aquatic life is important to the productivity of aquatic habitats.

Aquatic plants do not threaten the viability of aquatic systems in most circumstances. Only when their growth begins to have a negative impact on human activities is it considered to be weedy. The point at which plants become weeds depends largely upon the location in which they are growing and the intended use of that body of water. Hence the concept of «weed» is largely one of human perception. The primary reason for weedy growth is the combination of large areas of clear, shallow water with the presence of adequate nutrients (primarily nitrogen and phosphorus) in the system. Shallow, clear water allows the penetration of sunlight to the bottom, where the growth of algae and macrophytic vegetation begins. Aquatic plants are composed largely of water and consequently, relatively low levels of nutrients allow for rapid growth in terms of fresh weight. A major reason for the existence of weed problems is the introduction of exotic species from other countries. These plants quickly replace native vegetation and may dominate large acreages. This group includes the most troublesome weeds such as water hyacinths, alligatorweed, Eurasian watermilfoil, and hydrilla.

A number of factors must be considered in making environmentally-sound and cost effective management decisions. These include the type of plant, the use of the body of water, physical constraints, water quality, and the potential impact on fish and wildlife populations present in the target area. The combination of these factors determine what management options, if any, can be used for the weed problem in any given location.

FINDING INFORMATION: DICTIONARY USE



The following are online specialised dictionaries. Answer the questions for each dictionary:

http://library.thinkquest.org/10676/dict.html
CHEMISTRY CONSORTIUM

1) Open the page of Chemistry Consortion and have a look at the various links. What do you think about this page?

2) Open the page for the Chemistry Glossary. What do you think about this page?

http://www.chem.qmw.ac.uk/iupac/medchem/index.html
GLOSSARY OF TERMS USED IN MEDICAL CHEMISTRY

1) What does SPC mean? Define one of the techniques used in SPC.

2) What is a «second messenger»?

3) Which is the acronym for a new chemical entity?

4) What is your opinion about this dictionary?

http://www.chem.qmw.ac.uk/iupac/gtpoc/
GLOSSARY OF TERMS USED IN PHYSICAL ORGANIC CHEMISTRY

1) Does the word «acidity» have more than one sense? Which ones?

2) What's your opinion on this dictionary?

The following are also online specialised dictionaries. Try to find the following terms in them and compare it to a general English dictionary like the Webster online or the Merriam Webster online dictionaries:

Runoff water

Base saturation

Subterranean sources

DICTIONARY AND THESAURUS MERRIAM WEBSTER ONLINE
http://www.merriam-webster.com/

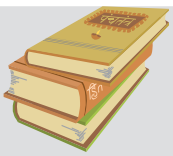
WEBSTER'S ONLINE DICTIONARY *with Multilingual Thesaurus Translation*
http://www.websters-online-dictionary.org/

BIOTECHNOLOGY
http://biotech.icmb.utexas.edu/search/dict-search.phtml

GARDENWEB GLOSSARY OF BOTANICAL TERMS
http://www.gardenweb.com/glossary/base

↘ Which of all these dictionaries did you like best and why?

FINDING INFORMATION: DICTIONARY USE



DICTIONARIES: PAPER DICTIONARIES AND WEB DICTIONARIES

Now we will pay attention to some things we can do with web dictionaries that are not possible with paper dictionaries.

❶

In some web dictionaries you may look up words in different dictionaries at the same time. For example, in the:

CAMBRIDGE DICTIONARIES ONLINE: http://dictionary.cambridge.org

you will be able to use seven Learner's Dictionary; Advanced Learner's Dictionary; Dictionary of American English; Dictionary of Idioms; Dictionary of Phrasal Verbs; Diccionario Cambridge Klett Compact; Dictionnaire Klett Compact

EXERCISE: go to the dictionary page and follow the steps below:

STEP 1. Look up the word «crop» to see how information differs from one dictionary to another.

STEP 2. Start with 1) the Learner's Dictionary, 2) the Spanish bilingual, 3) the Advanced Learner's Dictionary, 4) the American English dictionary, 5) the Phrasal Verb dictionary, 6) and finally, the Idioms dictionary

STEP 3. Note down the main differences you find between these dictionaries regarding the information they provide. Do not copy the entries, just explain the information differences.

❷

In some web dictionaries you may be able to see images related to your search.

We have already seen some words related to the shape of leaves in fruit trees.

Try to find the words: ***oblong, elliptical, lanceolate*** and ***clustered*** in the following online dictionary:

Plant Facts: glossary. http://plantfacts.osu.edu/glossary/
Or http://plantfacts.osu.edu/

You will find the illustrations are very helpful. According to the definitions of ***oblong, elliptical*** and ***lanceolate,*** could you explain in English which is the difference in meaning between the three adjectives?

Cambridge Dictionaries

For this exercise, please use the Cambridge Dictionaries

link: http://dictionary.cambridge.org

Cambridge Dictionaries provide useful information regarding the words that usually go together in English. This information is extremely useful to learn word combinations and when you have to write a text in English. Imagine for example that you are writing about the weather in your country and need to explain the amount of rain that may fall in some season. How would you say «llueve a caudales» or «intervalos lluviosos».

If you go to the entry for «rain» you will find this information:

Definition

rain
/reɪn/

noun [U] drops of water from clouds:
Rain is forecast for tomorrow.
*Come inside out of **the** rain.*
*We had **heavy/light** rain all day.*
*We got caught in **pouring/torrential*** (= a lot of) *rain without either raincoats or umbrellas.*
*There will be **showers of** rain/rain **showers*** (= short periods of rain) *in the east.*
***It looks like** rain* (= as if rain is going to fall).

rain
/reɪn/

verb [I]
If it rains, water falls from the sky in small drops:
*I think **it**'s starting to rain.*
It**'s raining **hard/heavily (= a large amount of rain is falling).

As you can see, the dictionary highlights the «collocations». Collocations are the words that usually go together, like «heavy rain», «showers of rain», «looks like rain» (parece que vaya a llover). Using this dictionary answer the following questions:

- How would you say «las plantas están sacando las hojas»?

- Which prepositions can you use for the verb «protect»?

- Which verb do you use to say «put the seeds on the ground»?

- How do you say that the seeds are «starting to grow»?

DICTIONARY USE: SPEAKING

You can use one of these dictionaries to check the pronunciation of the following words. Your classmate will listen to your pronunciation and decide which words to look up in the dictionary:

Macmillan Dictionary and Thesaurus
http://www.macmillandictionary.com/

Cambridge Dictionaries Online
http://dictionary.cambridge.org/

thunder	either	thought	leaf
the	both	there	live
this	they	thumb	leaves
thorn	think	moth	wife
threat	thriller	thief	wives
those	thermic	then	knife
mother	that	thief	knives

You may want to have some fun by listening men and women pronounce what you type in here:

Text to Speech.
http://www.oddcast.com/home/demos/tts/tts_example.php

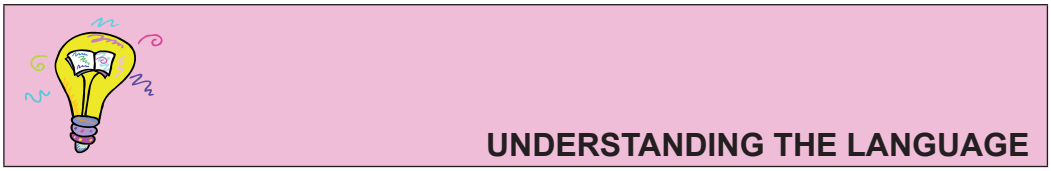
http://www.nextup.com/index.html

In this unit we have revised concepts related to word formation. We have also paid attention to a number of verbs that are frequently used in academic English. You have looked up many online dictionaries and have worked hard to get information from them. After all the issues that have been tackled here you are ready to pay closer attention to new words and their form and phraseology. From this unit onwards you will create and keep your own dictionary. Alternatively you may also create a group dictionary. Using Moodle, you can create a glossary in order to keep an organised list of important and useful words, their definitions and information that you consider relevant for those words and the (idiomatic) phrases they appear in.

UNIT 2

Writing: text structure and organisation

Unit 2 analyses organisational patterns in written texts. This unit deals with the principles of writing focusing on paragraph writing and information organisation. It tackles chronological description, cause-effect patterns, comparison and contrast and enumeration. The main aim of this unit is for the student to be able to write coherent paragraphs, select an adequate topic and distinguish between main ideas and supporting ideas, thus adopting a good organisational model for his/her texts.



What is a topic sentence?

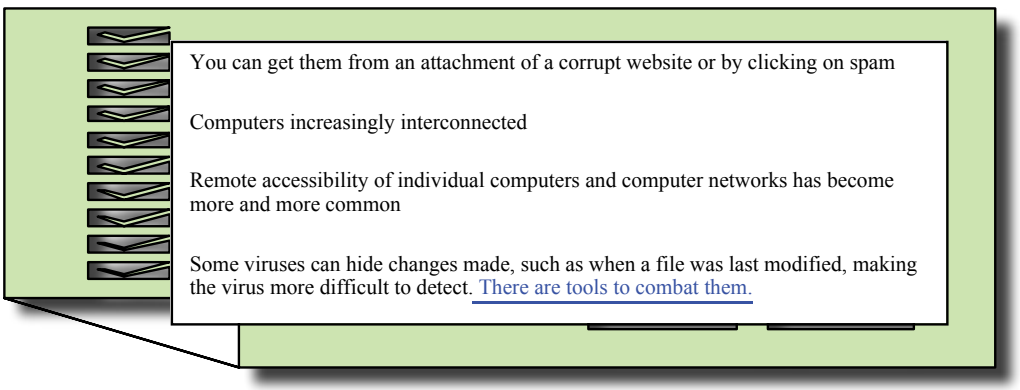
A topic sentence usually appears at the beginning of a text. Its function is to introduce a concept or idea you are going to talk about. It usually makes a claim of some sort and summarizes the main idea of the text that follows. The first paragraph introduces the main idea of your essay including a topic sentence and its function is to explain the importance of the topic or how the topic is going to be addressed.

Identifying a topic

In the sentences that follow, try to determine which is the topic or main idea by underlining it or identifying the main idea from the co-text.

Choose at least two sentences. Then, try to guess how you would develop that topic if your text started with that sentence. It doesn't matter if you are not sure about the information, just write an outline and try to organise all the ideas that come to mind in a coherent way.

* Example: It is very difficult to protect computers **from** incoming viruses



* *Growing number of governments today are striving to make sustainability as an integral part of their development strategy.*

* Egyptian writer, activist and feminist Nawal El Saadawi describes how from a very early age she felt subjected to inequality.

* *The International Greening Education Event (IGEE) 2011 is a premier global annual event that brings together stakeholders from around the world in Karlsruhe, Germany to discuss the challenging issue of integrating sustainability across all academic disciplines.*

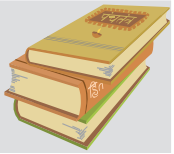
* Lady Gaga has surprised one of her Canadian fans by recording a personal video message in support of his campaign against school bullies.

* *Nasa launches its most ambitious mission to Mars yet - a 900kg robot to find out whether the Red Planet is, or ever has been, suitable for life.*

* Singer George Michael cancels the remaining dates of his tour while he is treated in Vienna for «severe» pneumonia, his publicist confirms.

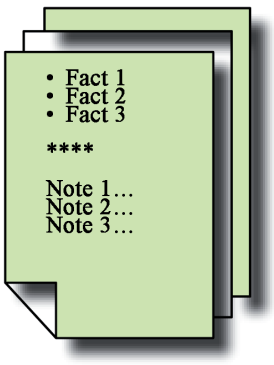
* *Thousands of Peruvians protest against plans for a huge new goldmine, in a dispute that is a test for President Humala's policies.*

FINDING INFORMATION



After writing your outline, try to find information in the Web that is related to one of the chosen topics. **Read or listen to** at least four different texts, and then go back to your outline in order to improve its content and organisation.

Making lists in order to organise ideas



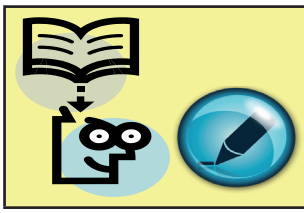
One thing you can do to investigate a topic is to make a list of ideas. Try to write as many ideas as you can. Then, you can try to rearrange those ideas by putting related ideas together.

You can also try to expand ideas by adding notes with some explanations and examples for each idea. Try to provide one or more statements that support each idea you have.

Try to use this approach to start writing a text. Consider the following issue:

- In your opinion, what is a healthy lifestyle? Why not become a vegetarian?

Now, make a list with the main ideas that come to your mind. Then, make notes for each idea expanding them a little bit more. After that, decide how to organise your ideas considering which the main argument is for you. Choose an adequate order so that the ideas may be connected and easily followed.



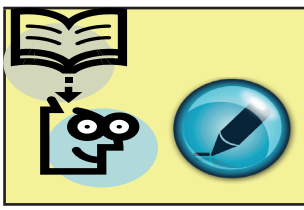
ORGANISING YOUR IDEAS: WRITING

We will now try to include more connectors in our compositions. Use some of the linking words and phrases below to connect the arguments that develop the main idea of your essay. Try to choose those you don't use frequently:

FIRST – A KEY POINT IS – SECOND – MOREOVER – THERE IS A NEED TO – THIRD – AS I SAID BEFORE – ANOTHER – IN ADDITION – ALSO – FURTHERMORE – RELATED TO – THE MAIN IDEA IS – THEN –
AT THE SAME TIME – TOO – NEXT – BEARING THIS IN MIND – THERE ARE THREE BASIC POINTS –
THERE ARE TWO MAIN POINTS TO CONSIDER / REMEMBER

Choose one of the following topics:

- Is cosmetic surgery a good choice to improve your self image?
- Open book exams



ORGANISING YOUR IDEAS: SUPPORTING DETAILS

Remember a topic sentence includes the main idea of the essay. Key ideas in the following paragraphs work in a similar fashion; they introduce supporting details that are explained with definitions or examples providing specific details. Thus, the main idea or topic is supported by other key ideas that are directly related to

it and further illustrate and clarify your topic and your opinion or other people's opinion about it. Read the text below and identify 1) the main idea, 2) other key ideas and 3) supporting details for each key idea.

Coercion

In psychological coercion, the threatened injury regards the victim's relationships with other people. The most obvious example is *blackmail*, where the threat consists of the dissemination of damaging information. However, many other types are possible e.g. so-called «emotional blackmail», which typically involves threats of rejection from or disapproval by a peer-group, or creating feelings of guilt/obligation via a display of anger or hurt by someone whom the victim loves or respects. Another example is coercive persuasion. Government agencies may use highly intimidating methods during investigations e.g. the threat of harsh legal penalties. The usual incentive to cooperate is some form of plea bargain i.e. an offer to drop or reduce criminal charges against a suspect in return for full cooperation.

Taken from: *Wikipedia*: entry for coercion. http://en.wikipedia.org/wiki/Coercion

In the following text, you can see how key ideas (in this text, six different examples) are identified, then the writer provides an explanation followed by an example and finally the writer closes the key idea with a conclusion.

Carefully analyse the text to see how the author develops this strategy with each of the six examples. You may underline them as in the first example.

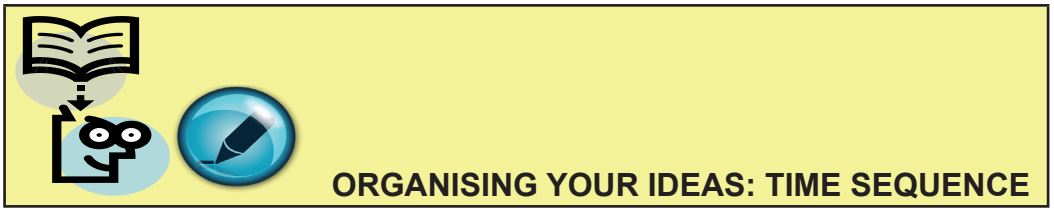
Annotated Bibliography: Language, Gender, and Writing

In this article Laurel Richardson, a sociologist and writer in the field, describes six examples of how the English language portrays women as inferior. The first example is that women are not seen separately of men. The word «he» or «man» is used to describe both men and women in a group setting. An example of this is «one small step for mankind». Therefore, when people read examples like this men are almost always envisioned. The second example is that many pronouns

are gender specific. Words such as nurse and secretary are always associated with women and lawyer and doctor are associated with men. We also are taught to associate weak words like small and graceful as feminine and words such as strong and powerful with men. There is motivation by some to make the language more neutral by using phrases such as police officer instead of policeman but the language is still far from being unbiased. The third example is that men are infrequently called «boy» unless they are young or are being ridiculed but women of all ages are referred to as girl. Women of all ages have «girls night out» but one never hears of a boy's night out.

The next example is that women are defined in terms of their sexual desirability to men whereas men are defined in terms of their sexual «prowess» over women. Slang words for women include «chick» and «broad» whereas men are referred to as «stud» or «hunk». The language reinforces the expectations in females and males as sexual objects and performers. Neutral words --it's easy, he's easy, she's easy-- can become sexual when applied to women. The first shows that something that one does is easy. The second refers to people that are easy such as teachers but the third generally refers to a woman being a slut. The fifth example is the way women are defined in terms of their relation to men whereas men are defined in their relation to the world at large. The example given was the difference between the meaning of master and mistress. Master is a positive term given to men when they are good at something whereas a mistress is a «bad girl». The last example is that many neutral words that are feminine are now being used derogatorily. Words such as mother are being added to swear words to change their meanings. Richardson thinks this is another way women are brought down in society and made to feel inferior.

Taken from: English 210 students of J. Paul Johnson, Winona (MN) State University, 30 January 1997. *Annotated Bibliography: Language, Gender, and Writing*. Richardson, Laurel. «Gender Stereotyping in the English Language.» from The Dynamics of Sex and Gender. New York: Harper & Row, 1988. http://course1.winona.edu/pjohnson/gender/richard.htm/



Do some Internet research and try to find out ideas for the following essay:

Legalization/non legalization of marijuana

You should try to find information on this issue referring to different periods of time. Try to relate the cultural and social situation of one period with the issue of legalisation.

ORGANIZATIONAL STRUCTURES: TIME SEQUENCE

Read the following text. How is Newton's life presented from a chronological perspective? How is the text organised?

Isaac Newton's life can be divided into three quite distinct periods. The first is his boyhood days from 1643 up to his appointment to a chair in 1669. The second period from 1669 to 1687 was the highly productive period in which he was Lucasian professor at Cambridge. The third period (nearly as long as the other two combined) saw Newton as a highly paid government official in London with little further interest in mathematical research.

Taken from: *The MacTutor History of Mathematics archive: Sir Isaac Newton.* http://www.gap-system.org/~history/Biographies/Newton.html

Read the text below and study which are the verb tenses that are used here. Explain the change of verb tense.

Disaster's Aftermath: Assessing Hurricane Irene's Damage

Scientists from some of the areas hardest hit have now had time to evaluate the storm's dramatic geologic effects on their home states

By Andrea Mustain and OurAmazing Planet | Friday, October 14, 2011

MINNEAPOLIS – Less than two months after Hurricane Irene barreled up the eastern coastline of the United States, a group of scientists from some of the areas hardest hit presented evidence of the storm's dramatic geological effects on their home states.

Researchers from Pennsylvania, New Jersey, New York and Vermont took to the podium at a meeting of the Geological Society of America, to discuss what they've learned since the massive storm swept across the Northeast.

The numbers that are emerging, not surprisingly, paint a picture of a powerful storm that sent record rains surging into New England's waterways, causing landslides, massive flooding and billions of dollars in damage.

Excerpt taken from: http://www.scientificamerican.com/article.cfm?id=hurricane-east-coast-damage (Permanent Address)

UNDERSTANDING THE LANGUAGE

Organizational structures: *organizing reasons*

The order in which you state different reasons is important. A reader usually remembers the last point better and that is why the most important reason is frequently located at the end of a cause-reason or argumentative essay. It is important to consider how you want to organise reasons before you start writing because the organisation of those reasons will determine how convincing you are. Sometimes, however, the most important reason will appear at the beginning of your text, and then you will strongly defend that reason throughout your essay by providing related reasons that help explain the main one.

READING COMPREHENSION

Read the text below and answer the following two questions:

1. Which are the writer's four reasons for giving up smoking?
2. Which one is the most important reason? Why?
3. Do you know anyone in your family or among your friends who smokes? Why do you think he/she does it?
4. Which is your most important reason for giving up smoking and why?
5. Which is according to the text the percentage of deaths caused by smoking as opposed to other causes?
6. Does tobacco smoke contain toxic chemicals? Can you name one?
7. How many years do non-smokers outlive smokers on average?
8. Can ex-smokers expect a healthier old age than smokers?
9. Read the paragraph on **WAYS OF QUITTING** and use a conditional sentence to give an advice to your classmate, for example:

If you want to quit smoking...

⇨ *... a good idea is to tell your spouse and friends that you want to quit and need their support*

⇨ *... you could tell your spouse and friends that you want to quit and need their support*

Smoking

By Dr David Delvin

Does anyone in your family smoke? And does anyone in your family smoke near you, your children or grandchildren? If the answer to either of these questions is 'Yes', then please read on .....(...)

The reason why we keep warning people about the dangers of cigarettes is quite simple - **Every day we see the disastrous health effects of smoking**. We see:

People in their 60s, or 70s who are dying of lung cancer.

Tiny children who have developed bronchitis because their grandparents or parents puff smoke all over them.

Men and women of retirement years who suddenly find themselves crippled by emphysema and chest infections.

People who keel over with smoking related heart attacks - when they should have had years of happy life before them.

(...)

WHY DO WE SMOKE?

So why do we smoke? And why do people carry on smoking despite all the medical evidence? Well, there are several factors involved:

Smoking can make you feel nice.

For some it's relaxing, and helps combat the stresses of life.

It's often a sociable thing to do - offering good cigarettes or even a cigar can be perceived as a great way of getting to know people!

Many human beings just love having something in their mouths - remember that childhood dummy?

Finally, and most importantly, nicotine is a VERY addictive drug.

That last point is the one which the tobacco industry has tried to conceal from the public over many years. But the truth is that once you can get a man or a woman 'hooked' on nicotine, it becomes very, very difficult for them to get off it. The brain now CRAVES nicotine - and therefore the person feels really rotten if he or she tries to do without it.

In a moment, we'll look at ways of beating the craving. But first, let's take an in-depth look at the health risks of tobacco.

HEALTH RISKS OF SMOKING

Worldwide, smoking kills millions of people each year. In Britain, it's estimated that the annual death toll is about 120,000. That's around **one in five** of all deaths! Why is it so dangerous? Mainly because the fumes that you are inhaling are so blooming dirty! Imagine what would happen if you kept breathing in bonfire smoke every day; your air passages would soon be coated with muck. Well, that's exactly what happens with smoking.

Tobacco smoke doesn't just contain nice-smelling things. It also contains over 400 really toxic chemicals - in other words, poisons. In the same way that they turn

people's fingertips and moustaches yellow, they also stain your 'insides' - with disastrous results. Tar, carbon monoxide and nicotine surge into your body with each puff, creating havoc - and (in most cases) eventually damaging your health.

Yes, even though you may THINK that you're OK, the odds are that smoking will shorten your life. The average smoker lives about seven years less than a non-smoker - which is why life insurance companies are now so very interested in whether you smoke (see question and answer below). Non-smokers can expect a healthier old age than smokers. Interestingly, so too can EX-smokers! So it's always worth giving up - no matter how old you are!

The major health problems, which can eventually hit smokers, are:

- **Heart attacks (coronary thrombosis or myocardial infarct);**
- Angina;
- Hardening of the arteries;
- Blockage of the blood vessels leading to the feet, causing poor circulation and sometimes gangrene;
- Impotence;
- Stroke;
- Kidney trouble;
- High blood pressure;
- Lung cancer;
- Cancer of the mouth;
- Cancer of the throat;
- Cancer of the tongue;
- Rather surprisingly, cancer of the cervix;
- Smoker›s lung - long term inflammation of the air passages;
- Chronic obstructive pulmonary disease (‹Obstructive Airways Disease›);
- Ulcers and indigestion.

The list is huge and goes on and on and on. I simply haven't space to include ALL the nasty diseases that smoking can give you. So, honestly, it's best to quit NOW!

WAYS OF QUITTING

Alas, because nicotine is so very addictive, it is very hard to give up - as anyone who has tried it will know.

I have to tell you that there's no easy answer to the problem of how to quit. Only real **WILL POWER** will do it. I'm afraid that neither your doctor nor anyone else can do it for you. However, here are some things that will help;

Tell your spouse and your friends that you are quitting - and ask for their support. Beware of the 'false friend' who keeps offering you the odd cigarette - because 'just one doesn't matter'.

Pick a date on which you're going to quit - and keep to it.

On that day, chuck out all your cigarettes (or other tobacco) - and also all smoking 'bits and pieces,' like matches, lighters, ashtrays, pipes or whatever. Sell your cigarette case!

Do SOMETHING ELSE instead of enjoying a cigarette - make it whatever you most enjoy. Ideas which have proved useful include: having a chocolate, having a sweet, going for a walk somewhere nice, going to a good film - or even having sex!

Occupy your HANDS. Many smokers find that their hands seem to 'yearn' for the support of a cigarette. So do something else with them - writing, chess, crosswords, knitting, sewing, odd jobs, handicrafts, or (if you can do it!) playing the piano.

(Taken and adapted from: http://www.retirement-matters.co.uk/gparchive/smoking.htm)

UNDERSTANDING THE LANGUAGE

Organising your ideas: *explaining reasons*

Use transition signals to introduce reasons

Transition signals can indicate the introduction of a reason. These expressions help a reader to follow your ideas from one reason to the next. Examples of transition signals are:

The first reason is that . . .
Another reason is that . . .
The most important reason is that . . .
First of all, . . .
Second, . . .
Finally, . . .

Identify the reasons that are given in the following extracts and the transition signals employed to introduce those reasons: SKETH ENGINE

Why don't producer nations simply switch crops and either become more self-sufficient in food, or produce a different cash crop? This course of action is difficult for a number of ***reasons***. Firstly, many countries have management arrangements with Western corporations whose main concern is making a profit. They are not

concerned with particular local food requirements and they usually control the most fertile land for cash cropping.

Also, a Third World country which depends on an export crop for foreign exchange simply cannot change crops in times of recession - it takes several years and many dollars to restructure an industry and to plant new crops. In fact in times of recession, sugar producers tend to produce more sugar, in the hope of earning more currency. This of course, simply depresses world prices further, making matters worse for them.

if you've got a group who're gonna launch a bomb y'know that that groups make far more risky or dicy de decisions than individuals. So if you look at individuals making erm decisions about punishment or some decision where there's a consequence or an element of risk, you'll find that groups quite often tend to go for more extreme behaviour than any one of the individuals in the group. There's a lot of stuff written about why that might occur. Right, there's a list of ***reasons*** why that might occur. Erm how do people sort of beco when you become a member of a group, usually in some way the group changes you as you go through different stages of it, your values may change as a result of interacting with people in the group and th this process of erm somebody's come up with how it is that you start off in a group, how it is that you become an active member of a group, how it is you may even become involved in the maintenance of the group.

The implications of their model for the relationship between new technology and people's experience of work are of course clear. They would suggest that, when new technologies are being introduced, care should be taken to design jobs associated with those technologies which have the core job characteristics they specify. Hackman and Oldham are, however, pessimistic about the amount of attention that will be paid to job design considerations as new technology is introduced. They suggest a number of ***reasons*** for this. Firstly, they admit that, although there is now a substantial body of knowledge about what makes a job a good one, there is much less knowledge available so far about how to apply job design theories in real life settings. Secondly, social scientists are only just beginning to develop procedures for evaluating the economic costs and benefits of innovative work design; and, thirdly, little is known about the conditions under which these innovative job designs persist across time and diffuse across companies and countries. Moreover, say Hackman and Oldham, even if we had this knowledge, it would still be a struggle to implement good job design principles. It will always be a battle between `hard' engineering knowledge about the specific new technology being implemented and `soft' behavioural knowledge.

got your socket joint the same, but you can see the head of the femur is not inside it is it? How does that happen? That's a very good question, there's a number of ***reasons*** for it happening, erm it might be that the groove, the, the socket bit is very shallow, like a shallow tea cup and the hip, the leg bone doesn't stay in it properly, does that make sense to you? Yeah Big one, it might be that the muscles and ligaments are weak Cathy surely if it's like you know said that would be too big to go in there anyway No not you said that was too shallow, so it didn't fit in, how can it be

of an Act of Parliament. The fundamental purpose of legislation is to create, amend or repeal law, thereby giving effect to the intentions of Parliament. Legislation may be required for any one of a number of ***reasons*** : (1) To create new rights, an example of which is the Equal Pay Act 1970. (2) To reform an unconscionable decision of the courts which is unworkable in practice; Parliament may pass an Act which has the effect of overruling the courts' decision. (3) To raise revenue; the annual Finance Acts are passed to give legislative authority to the Chancellor's Budget. (4) To put into practice political policies, for example the Race Relations Act 1976. (5) Codification of case law; Parliament may pass legislation in order to give legislative effect to judicial decisions in one statute. (6) Consolidation of previous legislation, for example the Employment Protection (Consolidation) Act 1978. (7 (7) To cope with an emergency, for example the Drought Act 1976. Primary and secondary legislation Primary legislation This form of legislation comprises Acts of Parliament. Parliament has unlimited legislative power. This stems from the doctrine of parliamentary sovereignty, which is a fundamental principle of English law. This doctrine means that a person cannot question the validity of a piece of legislation through the courts.

Use your imagination to write details to support the reasons in one of the following compositions. Then, choose one of the topics to explain reasons orally, taking into account that written and oral discourse generally use different patterns and vocabulary:

- Consider and explain your reasons to study abroad
- Should a single parent adopt a child?
- Which would be your main reasons to quit a job?

READING COMPREHENSION

In the following text, underline reason phrases and vocabulary:

Antibiotics have been around for years, so why is it only recently that antibiotic-resistant bacteria have become the focus of attention and alarm? Also, why are resistant strains especially likely to arise if a patient doesn't complete a course of antibiotic therapy? It seems counterintuitive.

| Friday, July 18, 1997

«Years of misuse of antibiotics led to the emergence of infectious bacteria that are resistant not just to one but to many antibiotics. As a result, there are strains of bacteria today for which we have only one effective drug treatment or, in some cases, none at all. For the first time since the discovery of antibiotics, patients in the U.S. are dying of bacterial infections that cannot be treated. The other half of the problem is that medical researchers have not found any fundamentally new antibiotics in the past decade, and we do not expect the discovery of any in the near future--we must rely on the ones we currently have. That limitation is why many of us consider this a true public health crisis. Resistance has been a critical factor in the appearance of 'reemerging infections.' We can no longer effectively treat some diseases that we were treating easily just five to 10 years ago.

«Many of the people writing about the resistance problem now have firsthand experience of the problem. Once they became aware that bacteria are no longer succumbing to treatment, they asked why, and pretty soon there was a media blitz about the risk of drug-resistant diseases. Another reason for the growing awareness is that antibiotic-resistant bacteria have become an everyday problem for people in the community; previously it was confined to very sick people in the hospitals. «Why are resistant strains more likely to appear if we do not complete a course of treatment? Bacterial infections are caused by hundreds of millions of bacteria, which are not all the same. Some are more susceptible to the antibiotic than others, and the bacteria reside in different parts of the body, some more sheltered than others. Each antibiotic treatment takes care of the most susceptible and exposed bacteria. An incomplete course of treatment will leave behind those that were in a safe place and those that, by mutation, happened to have some level of resistance.

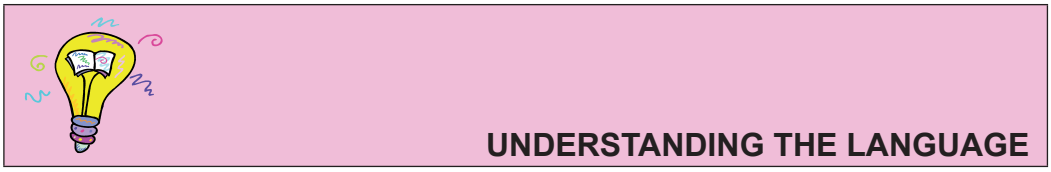
«When that population reestablishes itself, you will again have a large number of bacteria throughout the body, but they are less susceptible to the drug. Consequently, there is a greater likelihood that you will have a population that possesses some resistance to the antibiotic. A full dose of antibiotic keeps diminishing the bacterial population, which allows your body to clean up the modest remnant population.

If you stop taking the medicine, the population can increase and re-create the infection, so that the bacteria can then be passed along to others. Those bacteria then can go on to become even more resistant.»

(From Scientific American «Antibiotics have been around...»: http://www.scientificamerican.com/article.cfm?id=antibiotics-have-been-aro)

PLEASE ANSWER THE FOLLOWING QUESTIONS:

1. According to the text, what is the cause of the emergence of infectious bacteria that are resistant to many antibiotics?
2. Which is the reason why patients in the U.S. are dying of bacterial infections that cannot be treated?
3. Which would be the result of an incomplete course of treatment?

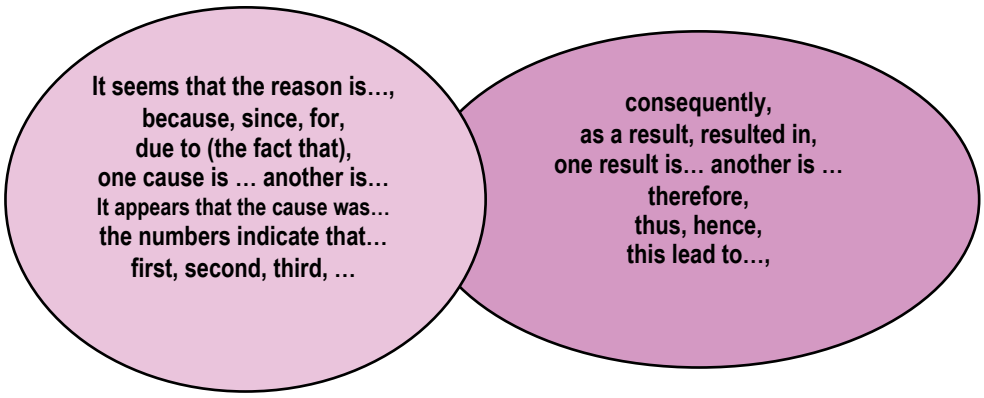


Organizational structures: *cause* and *effect*

When we talk about reasons a very common text structure is that of cause and effect. The cause is the reason why something happens and the consequences are the effects.

We may choose to talk only about reasons/causes or only about its effects, but the cause/reason pattern is very common and useful. You should decide on whether you want to emphasize the reasons or the effects depending on which of them is more important for your thesis. A cause and effect sentence may be a good introductory sentence. In a cause and effect essay you may organise your text dividing the topic into the most important causes or reasons in order to explain each of those reasons separately, you may also organise your ideas by order of importance (going from the most important reason or cause to the least important one or the other way round), and you could also organise cause and effect essays in a chronological order. When talking about graphics and statistical information, cause and effect patterns may be very useful in order to explain and interpret data. Discourse markers indicating cause and effect can be seen below:

CAUSE / REASON **EFFECT / RESULT**



READING COMPREHENSION

How Wildfires Work

In just seconds, a spark or even the sun's heat alone sets off an inferno. The wildfire quickly spreads, consuming the thick, dried-out vegetation and almost everything else in its path. What was once a forest becomes a virtual powder keg of untapped fuel. In a seemingly instantaneous burst, the wildfire overtakes thousands of acres of surrounding land, threatening the homes and lives of many in the vicinity.

An average of 5 million acres burns every year in the United States, causing millions of dollars in damage. Once a fire begins, it can spread at a rate of up to 14.29 miles per hour (23 kph), consuming everything in its path. As a fire spreads over brush and trees, it may take on a life of its own -- finding ways to keep itself alive, even spawning smaller fires by throwing embers miles away. In this article, we will look at wildfires, exploring how they are born, live and die.

Fire Starters. On a hot summer day, when drought conditions peak, something as small as a spark from a train car's wheel striking the track can ignite a raging wildfire. Sometimes, fires occur naturally, ignited by heat from the sun or a lightning strike. However, the majority of wildfires are the result of human carelessness.

Everything has a temperature at which it will burst into flames. This temperature is called a material's **flash point**. Wood's flash point is 572 degrees Fahrenheit (300 C). When wood is heated to this temperature, it releases hydrocarbon gases that mix with oxygen in the air, combust and create fire.

There are three components needed for ignition and combustion to occur. A fire requires **fuel** to burn, air to supply **oxygen**, and a **heat** source to bring the fuel up to ignition temperature. Heat, oxygen and fuel form the **fire triangle**. Firefighters often talk about the fire triangle when they are trying to put out a blaze. The idea is that if they can take away any one of the pillars of the triangle, they can control and ultimately extinguish the fire.

After combustion occurs and a fire begins to burn, there are several factors that determine how the fire spreads. These three factors include **fuel**, **weather** and **topography**. Depending on these factors, a fire can quickly fizzle or turn into a raging blaze that scorches thousands of acres.

Fueling the Flames

Wildfires spread based on the type and quantity of fuel that surrounds it. Fuel can include everything from trees, underbrush and dry grassy fields to homes. The amount of flammable material that surrounds a fire is referred to as the **fuel load**. Fuel load is measured by the amount of available fuel per unit area, usually tons per acre.

A small fuel load will cause a fire to burn and spread slowly, with a low intensity. If there is a lot of fuel, the fire will burn more intensely, causing it to spread faster. The faster it heats up the material around it, the faster those materials can ignite. The dryness of the fuel can also affect the behavior of the fire. When the fuel is very dry, it is consumed much faster and creates a fire that is much more difficult to contain.

(Adapted from: http://science.howstuffworks.com/nature/natural-disasters/wildfire.htm)

Exercise one:

Define the following terms: **wildfire, dry out, space out**

Exercise two:

Use Cause and Effect structures to explain how the following basic fuel characteristics affect a fire: **Size and shape, Arrangement, Moisture content**

You may use the following vocabulary: **pine needles, dry leaves, twigs, dead brush, logs, to dry out (material), to be spaced out, to be packed tightly**

READING COMPREHENSION

Using transition signals

READ the following text. The phrases highlighted in blue introduce the writer's position regarding the advantages and disadvantages of food-based plastics. In those paragraphs explaining the pros and cons of food-based plastics transition signals have been removed. Try to fill in the gaps in the text below by finding the transitional expressions employed to organise the text. Use the transition signals provided below (some of them may be used more than once).

Are food-based plastics a good idea?

(...) **Food-based plastics**, made out of everything from corn to sugarcane, have rapidly grown in popularity over the past several years. Packaging materials, gift cards, cell phone casings -- all can be made from these eco-friendly materials. As the quality of food-based plastics improves, they will have broader and broader applications.

Proponents cite **two main advantages** of food-based plastics over their petroleum-based counterparts. _____**,** they're made from a renewable resource. _____ farmers grow the crops these plastics are made out of, production can continue indefinitely. _____, food-based plastics are widely considered to be easier on the environment. _____, they require much less energy to produce than traditional plastics and release fewer greenhouse gases in the process. _____, they break down into harmless organic compounds -- in the right conditions.

Now for the drawbacks. **One of the most** glaring is their relatively low melting point. _____ popular plastics like **polyethylene terephthalate (PET)** may have melting points well beyond 400 degrees Fahrenheit (204 degrees Celsius), some plant-based plastics turn into puddles just from being left in a car on a sunny day. _____, **polylactic acid (PLA)**, a corn-based plastic used by retail giant Wal-Mart among other companies, can have a melting point of just 114 degrees Fahrenheit (46 degrees Celsius). _____, food-based plastics are simply unsuitable for a wide range of applications.

_____, food-based plastics may not be as environmentally friendly as they appear. _____ they are biodegradable**,** most only break down under very specific conditions found in industrial composting plants. _____ you can't simply throw them on the compost pile in your backyard and expect them to

turn into soil, and if they do end up in a landfill, they break down just as slowly as conventional plastics. _____ food-based plastics can be recycled, they can't simply be mixed in with other recyclable plastics. _____, the recycling industry considers food-based plastics a «contaminant» that takes time and money to process.

A final argument against food-based plastics is that generating them requires land and resources that could be going to producing actual food. Already, the U.S. Department of Agriculture (USDA) estimates that, by 2014, nearly a quarter of all grain production will go toward making ethanol and other biofuels; if food-based plastics take off, that number could climb even higher. Environmentalists also worry about the harmful effects of the pesticides and genetically modified crop strains used to create some of these plastics.

But don't give up on food-based plastics yet. _____ they still represent less than 1 percent of the plastics market, some very large companies have committed to both improving and using the plastics moving forward. _____, electronics manufacturers Panasonic and NEC have both announced the development of food-based plastics with significantly improved durability, heat resistance and ease of production compared to products currently on the market. Metabolix, another bioplastics manufacturer, has developed a plastic called Mirel that biodegrades in normal compost piles. Production costs for food-based plastics are rapidly dropping as well, which, coupled with their widening range of applications, will make them a much stronger alternative to conventional plastics moving forward. **Perhaps the strongest argument for food-based plastics,** however, is that after we've finally exhausted our supply of oil, they'll still be waiting for us.

(Adapted from: http://science.howstuffworks.com/food-based-plastics.htm)

FOR INSTANCE	WHAT'S MORE	AS A RESULT	IN FACT
FIRST	WHILE	AS LONG AS	SECOND
WHAT'S MORE			
BETTER YET			

- Which of the transition signals above was more frequent in the text?
- Which is the typical sentence structure it appears in?
- What does it express, instantiation, additional information or contrast?
- How does the sentence structure help to express that meaning?

READING COMPREHENSION

Read the following extract. Then, try to complete the gaps in the second part of the text:

Will the caffeine in chocolate make me jittery? Probably not. Cacao does contain a number of stimulants, such as caffeine and theobromine, but in small amounts that are diluted even further when processed into chocolate. In fact, one ounce of milk chocolate contains about the same amount of caffeine as one cup of *de*caffeinated coffee. Interestingly, one study has shown that the smell of chocolate may actually relax you by increasing theta waves in the brain.

Can chocolate cause headaches? There is little evidence of this, although some studies suggest that chocolate may trigger headaches specifically in migraine sufferers.

Is chocolate an aphrodisiac? Not really. Chocolate contains small amounts of a chemical called phenylethylamine (PEA) that is a mild mood elevator. It's the same chemical that our brain produces when we feel happy or «in love.» The mild «rush» we get from this substance may be why some people say they're «addicted» to chocolate.

Will chocolate raise my cholesterol levels? Contrary to popular misconception, eating lots of chocolate does not raise blood cholesterol levels. Chocolate contains stearic acid, which is a neutral fat that does not raise bad cholesterol (LDL). Also, the cocoa butter in chocolate contains oleic acid, a mono-unsaturated fat. This is the same type of fat found in olive oil that may actually raise good cholesterol (HDL).

Will eating chocolate make me fat? It can—if you eat enough of it. Chocolate, especially milk chocolate, is high in calories. In fact, it was once prescribed to help fatten up patients suffering from wasting diseases like tuberculosis. However, some people claim that drinking a cup of hot chocolate before a meal actually diminishes their appetite. One researcher even experimented with helping patients lose weight by having them sniff a chocolate-scented patch whenever they were tempted to snack!

Does chocolate contain any nutrients? Yes, it does, in small amounts. A 1.5-ounce milk chocolate bar contains recommended daily values of the following vitamins and minerals: 3 grams of protein; 15% of the Daily Value of riboflavin; 9% of the Daily Value for calcium; 7% of the Daily Value for iron. And if you add nuts like almonds or peanuts into the mix, you increase all of the amounts of nutrients listed above.

Will I live longer if I eat chocolate? Perhaps. A Harvard University study found that men who ate chocolate lived one year longer than those who didn't. Scientists think that chocolate contains chemicals that help keep blood vessels elastic and increase beneficial antioxidants in the bloodstream, but research is underway and no conclusive results have been found.

Many people eat chocolate when they are sad or feeling down. Others crave the stuff, claiming they are addicted to chocolate's unique taste and smell. Some even assert that chocolate can relax you, help you lose weight, and even prolong your life.

Scientists have conducted a number of studies on chocolate in recent years in order to sort through these claims. What they have discovered will not only surprise you, but may forever change the way you think about, buy, and eat chocolate.

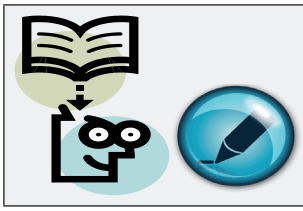
Is Chocolate Addictive? Millions of chocolate lovers insist that the sweet not only lifts their spirits when they are sad or upset, but also hooks them like a drug. Is there any hard evidence to support their claims? Not really.

▼ Despite – Such as - In addition to – However – Significantly - As for ▼

Chocolate can't give you a strong, physical «rush». Chocolate contains more than 300 chemicals, including stimulants _____ caffeine and theobromine. But these stimulants aren't present in large enough quantities to _____ affect the brain and nervous system.

Chocolate isn't chemically habit-forming. _____ these two stimulants, chocolate contains cannabinoids, chemicals that have the same effect ** the brain as marijuana. To get «high», _____, you have to eat more than 25 pounds ** chocolate ** one sitting. And these chemicals cannot make you physically addicted ** chocolate. **ON - TO - IN - OF**

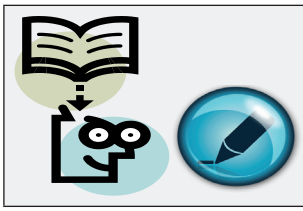
Chocolate *can* elevate your mood. _____ the ** facts, self-professed chocolate addicts aren't delusional. Some researchers believe their obsession is more likely the result ** learned behaviours and cultural factors rather than chemicals. _____ chocolate's mood-altering properties—carbohydrates present ** the sweet can _____ (raise) serotonin levels ** the brain and _____ (lead) ** a feeling ** well-being. **OF - TO - ABOVE (x2)**



ORGANISING YOUR IDEAS: WRITING

Now, try to write a similar text considering the benefits of drinking tea. Below you have a list of ideas:

- fresh brewed hot tea is healthier than iced tea
- reduces heart attack risk
- green tea is the healthiest
- more than four cups of tea a day can increase women's risk of developing rheumatoid arthritis
- contains antioxidants
- can protect against heart disease
- reduce the risk of ovarian cancer
- is better than water
- protects against tooth decay



ORGANISING YOUR IDEAS: CONCLUSION

The conclusion

In an essay supplying reasons, you may use the conclusion to reformulate the main idea to end your text. Have a look at the following concluding remarks:

- Construction acts as an «economic multiplier», by generating and regenerating our urban, suburban, and industrial environment, and by building the infrastructure the UK needs to compete in a global marketplace. For every £1 spent on construction, GDP increases by £2.84. If we want growth, we must build. (from http://www.telegraph.co.uk/finance/comment/8557774/If-we-want-economic-growth-we-must-build-more-houses.html)

- Providing an opinion based on beliefs, insufficient information and half truths may result in more harm than good. I often say that opinions are like noses, everybody got one. (from: http://alumni.iitr.ernet.in/LinkClick.aspx?fileticket=TJO8UZlbmvw%3D&tabid=38&mid=562)

- ... I like to look at the headlines, but I like to keep my eye on the trend lines. And the trend lines are that if we do not act now to increase the opportunity for food security, we may never catch up. Demography, climate, other problems are militating against our efforts, which therefore requires us to be even more determined. (from: http://www.state.gov/secretary/rm/2011/05/162795.htm)

- Let's move relentlessly ahead in advancing food security not only for more of the world's people, but a goal of all of the world's people. Thank you all very much. (from: http://thehill.com/blogs/congress-blog/foreign-policy/159643-we-must-act-now-on-food-security)

If you had to write an essay answering the following question:

- Should companies producing guns be held responsible for crimes involving guns?

What would you say to conclude your essay?

EVALUATING A SITUATION

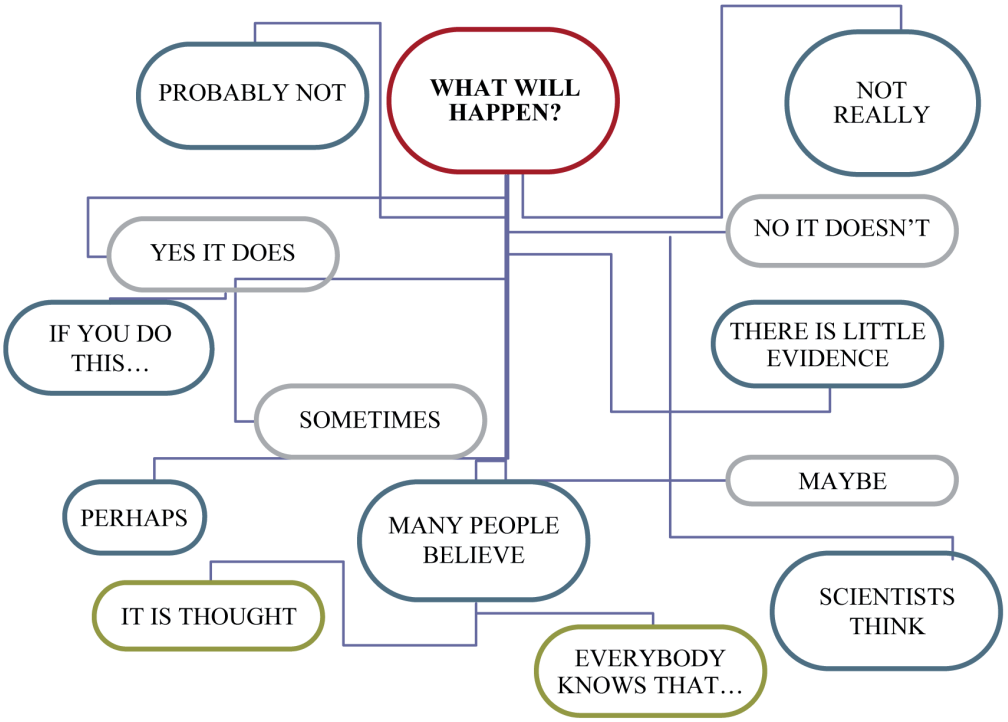
In the following text, you will observe that the authors start by providing a list of factors that are the cause of environmental degradation. Then, they explain how economic models and activities and the way they are developed have had a negative effect on earth. Which are the words that are used in the text to express attitude and opinion?

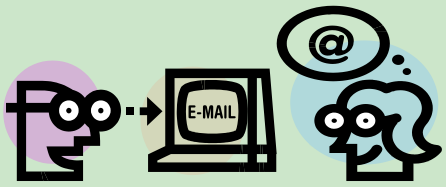
«Global warming, climate change, loss of biodiversity, pollution and other factors leading to environmental degradation caused by human actions are threatening the very existence of our ecosystems. The impact of our economic activities has reached a stage that is unbearable for the earth and the human health. And the recent global financial and economic crisis demonstrated the degree of vulnerability of the existing economic model.

In these challenging times, there is an urgent need for measures that connect economic, social and environmental aspects and achieve sustainable development.»

Taken from: *International Greening Education Event 2011*. http://www.etechgermany.com/IGEE2011.pdf

Now, try to use the following phrases to give your opinion on global warming:





WRITE AN EMAIL TO A WORKMATE

In the situations below, you have to:

❶Define the problem,
❷Identify and evaluate the crucial factors involved in the problem and
❸Formulate a strategy or proposal to solve the problem

Situation ❶

You found incriminating documents on a colleague's desk while looking for some files. These documents tell you that your workmate is going to disclose this information to one of your main competitors. Previous conversations with your workmate make you feel she/he has the intention to leave his current position and try to get a new offer in the other company and you suspect she/he is using this documentation in order to get the new job. She/he is always complaining about the amount of work, the low wages, the way your boss treats her/him, your

supervisor's decisions, how little she/he is valued, and many other things which you deem groundless and unjustified. However, you are not sure what to do. You think your supervisor should take action and dismiss your colleague. But, would you use this information if you obtained it unethically? That is, you shouldn't have touched or scrutinized your workmate's desk.

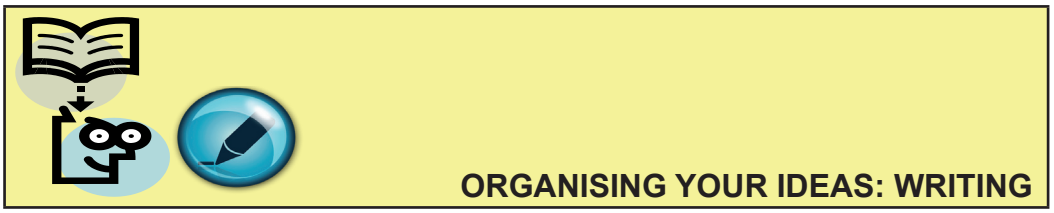
Situation ❷

The Fukushima Nuclear Situation
Earthquake and Tsunami in Japan

Areas that need to be addressed:

- Cooling reactors and spent fuel pools
- Build covers around the reactors and to deal with contaminated topsoil
- Stabilizing the site in the event of further seismic events or tsunamis
- Improve the situation of the workers at the site
- Working conditions: radiation levels, basic human needs
- Slow progress

(Based on: http://www.npr.org/2011/05/20/136501152/re-evaluating-the-fukushima-nuclear-situation)



Imagine you have finished your degree and you are now looking for a job. Which are the areas you would value most? Have a look at the following list and write a short text listing your priorities and evaluating them:

- Relaxed atmosphere and friendly environment
- How you have to dress
- Intellectual stimulation and creativity
- Job will bring you valuable experience
- Work flexibility with time for family and non-career pursuits
- Diverse responsibilities and experience with limited supervision
- Opportunity for training and development
- Your personal workspace
- Work consistent with professional and personal values
- Reasonable income
- The size of the company

After writing your essay, ask a classmate to decide to which extent does he or she agree with you. Ask that person to select an option in the scale below:

0	1	2	3	4	5
disagree	mostly disagree	partly agree	agree 50%	mostly agree	completely agree

READING COMPREHENSION

In the following pages, you will find a text entitled «*Should commercial interests be allowed to exploit the resources of the moon?»* That appeared in the journal *Scientific American*. The different paragraphs after the introductory text are readers' reactions to a previous article on the issue in this journal. Note that there are three marked positions: those in favour of the exploitation of the moon's resources, those who are against exploitation, and those who find positive and negative aspects in this issue. You will find that in most answers several modality devices can be used at the same time to express opinion and evaluation, as shown in the example below:

Adverb **modal auxiliary** **adverbial downtoner**

Most certainly commercial interests should be allowed free access to materials on the moon. Because of the enormous expense involved only the most responsible companies should be involved. This in turn will provide additional research resources to help solve the numerous problems what will surely arise.

Modal auxiliary **adverb**

The texts below present conflicting views. After reading the opinions in the texts, you will be asked to express your opinion on this issue. Try to make use of the linguistic devices exemplified above and in the text below. Use at least three different devices once.

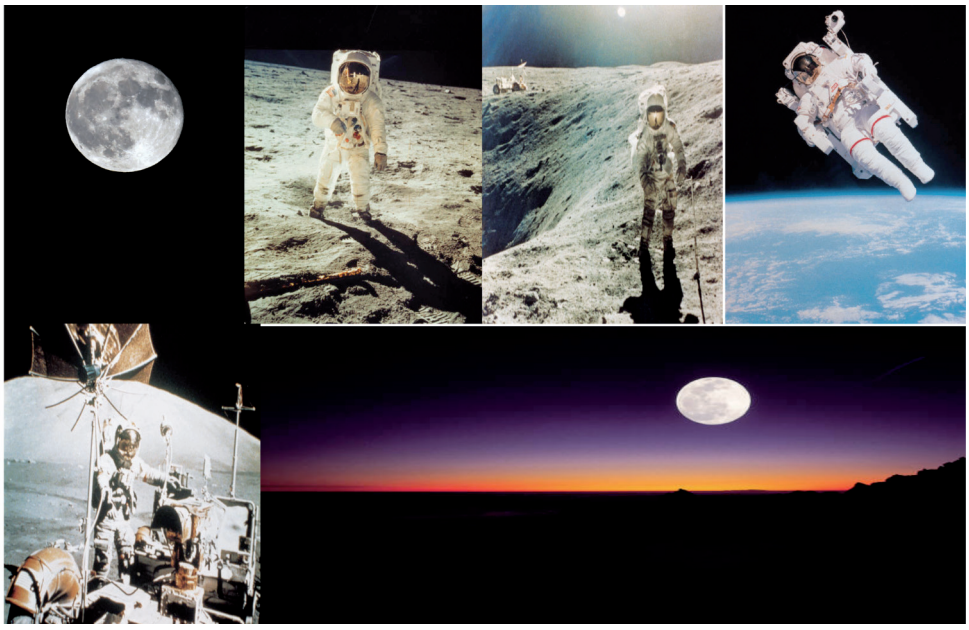
Should commercial interests be allowed to exploit the resources of the moon?

LUNA INC.

MOON BOOM. More flags may soon by flying on the airless moon. How should development of space resources proceed?

A recent *Scientific American Exploration*, Home, Sweet Home, reported that the confirmation of useable water on the moon would slash the cost of establishing lunar colonies there and could speed plans that are already underway for permanent bases. In that feature, we asked visitors to this website whether they thought that commercial interests should have a stake in developing the resources of space and if development should wait until the fabric of international law provides more safeguards, in particular, the still-unratified Moon Treaty.

As always, we received many more answers than we could possibly post--but several themes emerged. The majority felt that businesses should definitely have unregulated access to the moon. Many argued that free enterprise could further human interests in space more quickly--and more affordably--than governments could. A handful believed that commercial interests could benefit lunar colonization, but only if they were strictly regulated. A minority against lunar commercialization expressed fears about the potential abuse of moon resources. Here is a selection of the responses.



ENCOURAGE COMMERCIALIZATION

I think that we should exploit the moons resources, but only by a needed amount. What we have learned already is that when all of our resources run out here on Earth, there is nothing we can do to get them back.

Robert B. Maxwell Nassau Bay, Texas

The law of the frontier has applied since the dawn of man; I expect that it should apply to the moon as well. No one, and no government, «owns» the moon. Whoever can establish the first and best presence there should be allowed to exploit whatever they find. Those who incur the risk and expense can reap the benefit. At least this time there are no indigenous people, flora or fauna involved. Perhaps «should be able to» isn't quite how I feel--I don't like the idea that anything, including the moon, is there for human exploitation. Maybe «cannot legitimately be prevented» is closer to the mark.

Thomas Caldwell, Springfield, Va.

Space is, in a certain perspective, no different from just another continent. Had there been no economic benefit, Spain wouldn't have colonized the new world. England, or should I say English companies, wouldn't have supplied and recruited colonists if they hadn't seen money in ¡t. This question of whether resources in space should be open to private business seems almost silly.
Most governments have a tough time using tax dollars simply to advance science or exploration. If the computer had been left up to the government, we would be using 286's about now. I'm not saying this to hash our government; I'm saying it because it is a reality. The question really boils down to whether we want the resources in space to be utilized or not. If those resources are open only to world governments, then it will be a very long time before those resources get used.

James Hansen Chester, Idaho

Commercial interests not only should exploit lunar resources, but must! Just think of the impact on our environment if most heavy industry were based on the moon. Nuclear plants and other factories would have almost no impact on living conditions. Moreover, the reduced gravity might permit polymers and new and old alloys to anneal, cure and temper into stronger, more durable lattices. Any company that exploits space will become rich, raising the standard of living for all. Also, If we wish to continue as a race and civilization, expanding into space is vital to the very survival of our species!

Matthew Heino Manteca, Calif.

I strongly agree that commercial concerns should be allowed to exploit the moon. This would make the exploration of space much more affordable. I am sure that any landmarks and conservation issues would he properly addressed.

Robert H. Arthur Oakdale, Calif.

The question should read, «Can we stop commercial interests from exploiting the moon's resources?» I believe we can't and we shouldn't.

Scott Bell San Diego, Calif.

Before exploitation must come exploration, and we should encourage commercially-oriented lunar exploration, as it offsets the immense costs involved. The payback is in science, technology and experience, and not necessarily in product; the former will lead to the latter as space exploration moves outward, using the moon as a crucial stepping-stone. Certainly commercial interests will benefit from lunar exploration and exploitation, but so shall we all.

Manfred Buchheit Holyrood, NF Canada

REGULATE LUNAR DEVELOPMENT

Creating a moon base is vital to the further exploration of space. However, private ownership of the moon should not be allowed, and commercial use of resources found in the moon should be banned now before anything happens. The moon should serve humanity as a whole, not any one individual. We, the generation of tomorrow, want to look at our sky at night and see the same moon that we see now--not a field of mines.

Bernardo A. Mainou Peoria, Ariz.

I think it's great that humankind can explore the moons and planets of this solar system, and I hope to see humans living on these bodies some day. But I think that if industry is given permission to use the moon, they must be more responsible than they have been on earth. We are just guests here. Who is going to clean up the mess that Pathfinder left on Mars? Are we just going to start littering the cosmos too?

Gregory A. Bell Sarasota, Fla.

BAN COMMERCIAL USE

Definitely not. Shouldn't even be thinking about it at this point. First things first!

Diane Smith Sebring, Fla.

I do not think that commercial interests should he allowed to use the moon. There are so many issues with corruption and who has the rights; it would just be a chance for the companies that are already rich to control space as well. I can already see the Microsoft logo on all the spaceflights entering and leaving the Earth.

Soren Ryland Atlanta, Ga.

We should not allow industry to exploit the moon's space and resources. Although it is undoubtedly true that commercial investment would accelerate plans for a moon colony that may not be the wisest decision to make. The first tentative steps humankind makes toward colonizing other worlds should not be a commercial venture; rather, they should be undertaken in peace, through the cooperation of Earth's nations.
It should not be a business endeavor, but one of the most spectacular and awesome events in human history.

Nathan Wall, St. Petersburg, Fla.

(Taken and adapted from: http://www.sciam.com/explorations/1998/0316moon/index.html, the original does not highlight any of the readers' answers)

The following sentences have been used in research articles. Try to figure out which are the missing modal verbs.

USE *CAN, COULD, MAY, MUST, NEED(S), SHOULD* TO FILL IN THE FOLLOWING GAPS:

1. In the later example it ____ be seen that, in comparison with metal, which undergoes gradual deformation when force is applied, ceramics suddenly break ...
2. ... ease in sintering temperature (Table 2) ____ be due to the above-mentioned reason ...
3. ...show a plastic fluid behaviour for which only apparent viscosity ____ be determined.
4. After the acquired data have been collected, they ____ be used to obtain the characteristic parameters of the test samples.
5. Researchers in the field of machine tools ____ bear in mind and take into account that the ...
6. Several requirements ____be met to achieve high thermal ....
7. The particles which ____be seen in the top right corner (magnified in figures 10 and 11) show ...
8. The translucency of porcelain bodies ____ be evaluated by absorption and scatter coefficients obtained from ...
9. an increase in sintering temperature ____ be due to the presence of a solid-solution
10. for the test performance the sample ____ have certain controlled dimensions...
11. The system accuracy ____be better than 1/256 of the maximum ...
12. parameters greatly. All details ____ be well considered before transferring ...
13. Only small quantities ____ to be added to produce better de...
14. The quantity of organics ____ to be controlled; i.e., high organic ...
15. polyacrilate _____be studied carefully before it is used ...
16. Should casting rate be measured, or _____ permeability be calculated to determine ...
17. all the parameters mentioned above _____ be taken into account.
18. the sum of reflectance and transmittance _____be lower than 100%.
19. Particular attention _____ be given to the dependence of electro-
20. after grinding, the following conclusions ____ be drawn: The granulation of the abrasive is directly correlated with...
21. It was believed that only specially qualified and experienced people _____ produce sanitaryware. However, this is no longer the case and now engineering has well proved that ordinary people without any specific skills ____ do this job because the casting process is completely automatic.

QUESTIONS:

What is the difference between using *must* or *should* in 12 and 15? What is the difference between using *may* or *can* in 20?

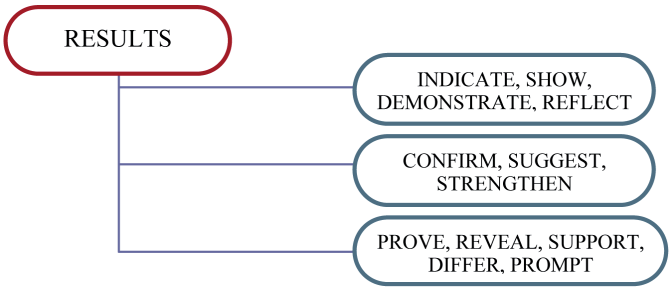
UNDERSTANDING THE LANGUAGE: the word RESULT

Understanding the word RESULT

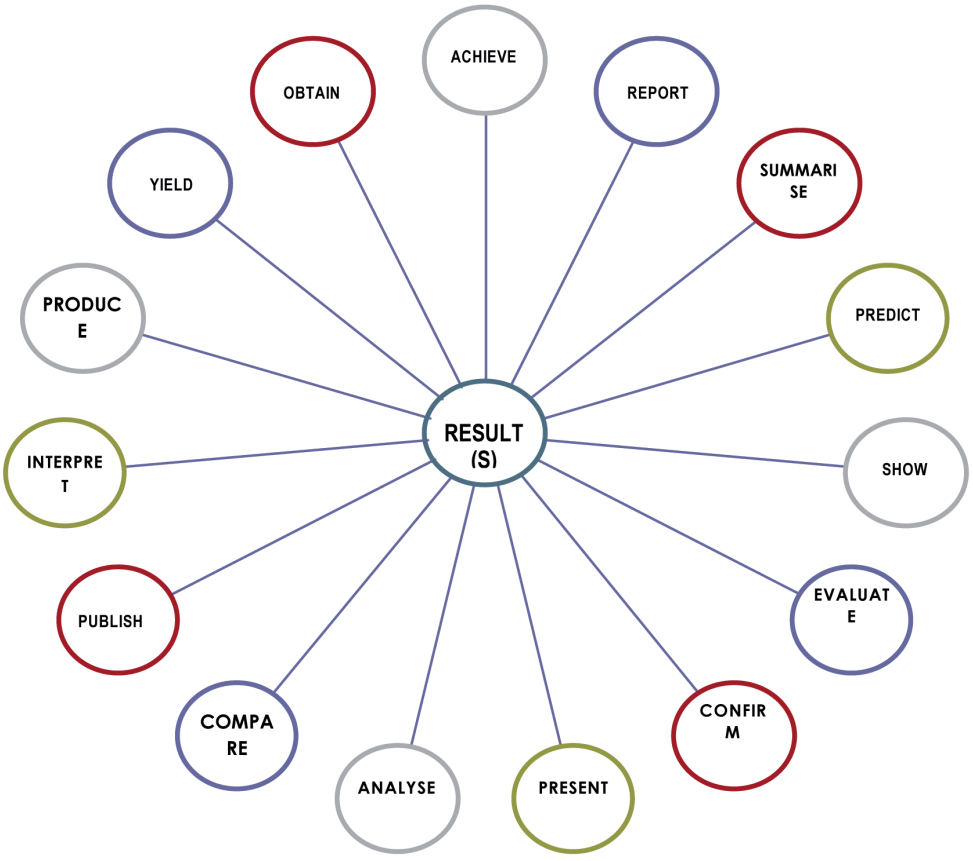
SketchEngine

The following diagrams represent the basic language patterns that are used in relation to the word «result(s)». Without looking at the following page, try to guess which are the verbs that co-occur with results as subject and which have results as object? Pay close attention to the verbs that are commonly used when talking about results. Which do you think are the two most typical ones in the structure «TO + VERB + RESULTS»?

Which are the **actions** *that results typically trigger?*



Which are the typical **VERB + RESULT** *patterns?*



We analyse and compare results in order to be able to evaluate them. How do you think they may be usually evaluated? Which would be the adjectives you would use in order to interpret results? Try to fill in the gaps with the correct adjective:

disappointing favourable disastrous encouraging comparable inevitable acceptable consistent negative inconsistent comparable positive spectacular

RESULTS THAT ARE...

Reliable and steady are _____
Extremely harmful_____
Bad and causing disaster _____
Irregular, illogical _____
Suitable for comparison_____
In one's favour_____
Good, more than zero _____
Extremely good, impressive _____
Less than zero _____

RESULTS THAT...

Fail to satisfy expectations are _____
Give confidence or reassurance are _____
Satisfactory, tolerable _____
Can / Could not be avoided_____

USING THE VOCABULARY AND LANGUAGE STRUCTURES WE HAVE JUST REVISED to talk about results, WRITE A SHORT PARAGRAPH EVALUATING:

- the results of your academic success, or
- tile production this year in the area where you live, or
- the number of cars sold this year in your city or village, or
- the results of dehydration in your body, or
- statistics show how household income has declined, or
- how and why Internet offers students a quick communication medium that can enable increased interaction with other students and with their tutors.

ORGANISING YOUR IDEAS: ARGUMENTATION

Verbs indicating argumentation Use the Merriam Webster dictionary, the Cambridge dictionaries online or the Macmillan online in order to understand the differences between these verbs. http://www.macmillandictionary.com/ (with collocation box) HINT: you may want to highlight those words in the definition that are essential to distinguish one verb from another	
Analyse	
Argue	
Criticise	
Critique	
Discuss	
Evaluate	
Interpret	
Justify	
Prove	
Review	

READING COMPREHENSION

Read the text below and then answer the following questions:

1. Summarise the text in no more than 5 lines.
2. Are the authors of the text for or against use of animals for research and testing? Give a reason for your answer.
3. According to the authors, what do many of the apparent anomalies in animal experiment reflect?
4. What is understood by «animal models»?
5. Can you name five urgent health problems of our time?

ANIMAL RESEARCH IS WASTEFUL AND MISLEADING

By Neal D. Barnard and Stephen R. Kaufman
(Scientific American. February 1997: 64-66)

The use of animals for research and testing is only one of many investigative techniques available. We believe that although animal experiments are sometimes intellectually seductive, they are poorly suited to addressing the urgent health problems of our era, such as heart disease, cancer, stroke, AIDS and birth defects. Even worse, animal experiments can mislead researchers or even contribute to illnesses or deaths by failing to predict the toxic effects of drugs. Fortunately, other, more reliable methods that represent a far better investment of research funds can be employed. The process of scientific discovery often begins with unexpected observations that force researchers to reconsider existing theories and to conceive hypotheses that better explain their findings. Many of the apparent anomalies seen in animal experiments, however, merely reflect the unique biology of the species being studied, the unnatural means by which the disease was induced or the stressful environment of the laboratory. Such irregularities are irrelevant to human pathology, and testing hypotheses derived from these observations wastes considerable time and money. The majority of animals in laboratories are used as so-called animal models: through genetic manipulation, surgical intervention or injection of foreign substances, researchers produce ailments in these animals that «model» human conditions. Evolutionary pressures have resulted in innumerable subtle, but significant, differences between species. Each species has multiple systems of organs - the cardiovascular and nervous systems, for example - that have complex interactions with one another. A stimulus applied to one particular organ system perturbs the animal's overall physiological functioning in myriad ways that often cannot be predicted or fully understood. Such uncertainty severely undermines the extrapolation of animal data to other species, including humans.

ORGANISING YOUR IDEAS: ARGUMENTATION

Trying to explain your ideas and beliefs on a particular issue may be very complicated, especially if you want to be able to express subtle ideas or points. Simply saying «I agree» or «I disagree» will not help you to create an interesting debate and you will only be able to present a poor argument. There are many phrases with which you can hedge your degree of agreement on a topic:

Let me explain... What I mean is that... In other words...
Let me give you a possible interpretation...
It is a good example of / a good illustration of... It connotes / refers to / is an indication of...
This can be interpreted as... / It shows that.../It proves that... If we look at it ....
we realise that...
It is a clear indication of.../ could be related to...
However, we should not forget that... A different interpretation of the problem
may be given by...
The reason is not clear/obvious. It presents a lot of ambiguities.
We may say/conclude that...

INSERT THE FOLLOWING PHRASES INDICATING AGREEMENT AND DISAGREEMENT IN THE TABLE BELOW

- Well, in my opinion...
- It is difficult to agree with such views
- I disagree with you
- I don't see things that way
- There's a lot in what you say, but...
- I'm sorry, but I find it difficult to agree with you on this
- I can't agree more
- I think so too
- That's true/right, and...
- Well, maybe...
- No way
- I'm afraid I can't agree with you
- I totally agree with you
- I can't accept your point of view
- You are completely mistaken

DISAGREE: DIRECT	DISAGREE: DIPLOMATIC	PARTLY AGREE 50%	MOSTLY AGREE	COMPLETELY AGREE

Start a debate on one of the following issues:

- Smoking in public places.
- Having sexual relationships with more than one partner is normal.
- Explain the pros and cons of studying in class vs. online teaching and learning.

Organizational structures: *comparison* and *contrast*

for comparing and contrasting information we need at least two different parts or issues that are being discussed. There are many adjectives expressing comparison and contrast. You already know basic adjectives and comparison structures in English (good, better, the best; bad, worse, the worst; as good as, better than, worse than, more than, less than, etc.). But there are many possible phrases and verbs introducing comparison:

Compare someone or something **with**...
Differ **in**... (e.g. size)
Draw an analogy / draw a parallel
Contrast **with**

just the same,
similar,
comparable,
related

In contrast, **by** contrast
Different **from**
Not like, not the same (**as**), unlike...
By far the best, top, number one, ideal
Not as good, can't compare

As compared to/with
sth. compares to sth. else...

On the one hand... On the other
hand opposite... On the contrary...
Although, Even though

Have nothing in common with
Be worlds apart
If we compare A and B, we realise that...
We should distinguish between X and Y because...
They are in sharp contrast / opposition
A clear pattern emerges from the comparison

Example:

The beauty of blogging, as compared to writing a book, is that no editor will be interfering with my random spelling and grammar, my complete disregard for the facts, and my wandering sentences that seem to go on and on and never end so that you feel like you need to take a breath and clear your head before you can even consider making it to the end of the sentence that probably didn't need to be written anyhow.

http://dilbertblog.typepad.com/

READ and

WRITE

The following two texts compare two different though related disciplines. Pay close attention at how the differences and similarities are explained. You may underline useful words and phrases. Once you have finished reading the two texts, join in a small group and try to explain the differences and similarities between:

a) A degree in Chemistry and a degree in Chemical Engineering,
b) Mechanical Engineering vs. Electrical Engineering, or
c) Studying Agricultural Economics and studying Agriculture, Agronomy and Horticulture.

You may use your computer to find information about these degrees.

Computer Engineering Vs Computer Science

Computer engineering, as the name suggests, is related to the engineering of your system hardware. It includes the designing of computer hardware and devices. It is derived from the science of computing such that it is the practical application of the computing science principles. It also includes some principles of electrical engineering. In short, this engineering is based on the laws of computer science, electrical engineering, mathematics and physics.

The main subjects dealt in this engineering includes display engineering, multimedia computations, image and speech processing, networking, pattern recognition, computer perception and sensors, VLSI systems, robotics, computer architecture etc.

Display engineering deals with the display mechanisms of a system. Multimedia computing include the handling of all kinds of data like the textual data, sounds, voice or audio, still images, animated images, video and more. It involves encryption, coding and decoding etc. Image and speech processing methods are used to deal with the processing of multimedia in a secure way. Networking of computers is a vast field that takes care of all the networking operations such as assembling network units, establishing connections, configuring them, initiating communication and data transfer and so on. It also handles designing and implementation of vast distributed computing networks that includes LAN, MAN and WAN. Pattern recognition and computer sensors are used for information security. Robotics is a practical application of artificial intelligence. Very Large Scale Integrated systems are a study to design microelectronic devices. Architectures from these take care of the designing of hardware and software for optimal results.

Continuing with our computer engineering vs. computer science, we are now going to move on to the science, which on the other hand is the study of methods, principles and laws for handling of information. It also lays the theories for designing and implementing them. The science subject leads to the subject of engineering.

The main subjects that come under computer science are artificial intelligence, computer architecture, software systems, numerical methods, algorithms, theory of computations, computer graphics, networking protocols, databases, operating systems, simulation and modeling, parallel computations and software engineering. Artificial intelligence is an area that is concerned with the intelligent behaviour in machines or software. Computer architecture explains the science behind the designing and construction of computer hardware and software for effective and efficient working. Software systems deal with programming languages, programming environments, operating systems, interpreters, compilers etc. Algorithms and theory of computations are used to develop programs that produce effective, efficient and optimal results and solve the computer problems. To conclude, we can say that the computer science is a subject that is mostly studied by scientists while on the other hand, computer engineering is a subject that is studied by the engineers.

(From: http://www.masshisto.org/computer-engineering-vs-computer-science.html)

Difference between Organic and Inorganic Chemistry

One of the two vastest branches of chemical science are organic and inorganic chemistry. In this article, I explain the difference between organic and inorganic chemistry for those of you who are planning to take up higher studies in chemistry.

When taking up your first advanced courses in high school level science, you will find two separate courses named organic and inorganic chemistry listed in the course schedule. Till date, you might have taken up only a single course in basic chemistry and the bifurcation of this subject into two separate parts might baffle you. As a subject advances in its scope of applicability and complexity, it tends to get divided into sub-fields and chemistry is no exception to this. According to the kind of chemical reactions studied and the materials investigated, chemistry is divided into organic and inorganic chemistry. In this Buzzle article, I have elucidated the difference between organic and inorganic chemistry, for beginner students taking up advanced chemistry courses.

What is Organic Chemistry?

Organic chemistry, as the name itself suggests, deals with the study of all kinds of organic compounds. Earlier, the term ‘Organic’ addressed compounds of biological

origin but now it is broadly defined to apply to all carbon compounds and hydrocarbons (C-H compounds) in particular. These includes alkanes, alkenes, alkynes, aromatic compounds, aliphatic compounds, polymers and biomolecules. It involves the study of structure, properties, synthesis, reactions and applications of organic compounds. Like any other field of chemistry, there is considerable lab work involved in a typical organic chemistry course which focuses on studying characterization, identification and analysis of organic reactions. Advanced courses in organic chemistry study biological reaction mechanisms like cellular respiration, protein synthesis, DNA replication and other such phenomena in substantial detail.

What is Inorganic Chemistry?

Inorganic chemistry focuses on studying the realm of non-organic compounds, which includes all naturally occurring and artificially synthesized metallic and non-metallic compounds. It involves the study of structure, properties and synthesis of these compounds. Advanced inorganic chemistry involves molecular quantum mechanics which provides an accurate description of the molecular structure of inorganic compounds. Reaction mechanisms involving inorganic compounds are studied in detail. Lab work in primary inorganic chemistry courses involves 'Inorganic Qualitative Analysis' aimed at training students in identifying the salts of various types through a series of investigative experiments. It also involves several quantitative analysis methods, like titration and actual synthesis of inorganic compounds.

Difference Between Organic and Inorganic Chemistry

After having defined the subject scope details of both chemistry branches, the differences between them should be already clear. While organic chemistry studies hydrocarbon compounds or organic compound complexes in general, inorganic chemistry studies the rest of subset of compounds, other than organic compounds. This clear distinction was necessary due to the higher complexity of organic compounds compared to inorganic compounds.

This necessitates a different set of analytical tools and ideas, for studying both subjects, which justifies the bifurcation. The scope of organic chemistry is much more wider than inorganic chemistry as it naturally prepares a student for higher studies in biotechnology, genetic engineering, microbiology, biophysics and other advanced biological sciences. Theoretical inorganic chemistry is in fact quantum physics and people with an analytical bend of mind, with a love for physics and mathematics, will find it to be an exciting field. Both are sufficiently interesting subjects of study. If you plan to make a career in biotechnology, a grounding in organic chemistry is a must. Inorganic chemistry provides access to the highly interesting field of nanotechnology. I suggest that you take up both courses, if you plan to make a career as a chemist as both train you to understand the structure of matter in a range of different material manifestations.

Thus the prime difference between organic and inorganic chemistry lies in the subjects of study. While one is primarily devoted to the study of carbon compounds including hydrocarbons, the other focuses on the study of the entire gamut of non-organic reactions. In organic chemistry, you will spend a considerable amount of time in rightly naming various types of organic compounds according to the right nomenclatures and then study the various synthesis methods of each different type of organic compound. This is just basic preparation.

Real organic chemistry starts when you start understanding the underlying mechanisms that make organic reactions possible and apply the knowledge in understanding various biological reactions. Inorganic chemistry will first focus on defining and describing various types of inorganic compounds, their structure and reactions. The division of a field into sub-parts is only for our own convenience. There are several phenomena where both inorganic and organic chemistry principles must overlap to provide us with some real answers. One such field where both fields merge is 'Organometallic Chemistry'. Hope this differentiation of organic and inorganic chemistry was an insightful read for you.

(From: Omkar Phatak http://www.buzzle.com/articles/difference-between-organic-and-inorganic-chemistry.html. 6/28/2011)

The last reading in this unit is about Internet and how the web went on strike to protest against SOPA (Stop Online Piracy Act) and PIPA (Protect IP Act). Reading this article we will review the most important ideas in this unit. In the article below, try to find the following:

- A topic sentence
- A definition
- A cause and effect structure
- Words and phrases expressing opinion
- A contrast sentence
- Examples of evaluative language

Imagine a World

Without Free Knowledge

For over a decade, we have spent millions of hours building the largest encyclopedia in human history. Right now, the U.S. Congress is considering legislation that could fatally damage the free and open Internet. For 24 hours, to raise awareness, we are blacking out Wikipedia. Learn more.

SOPA and PIPA - Learn more

From Wikipedia, the free encyclopedia
Wikipedia: SOPA initiative

Why is Wikipedia blacked-out?

Wikipedia is protesting against SOPA and PIPA by blacking out the English Wikipedia for 24 hours, beginning at midnight January 18, Eastern Time. Readers who come to English Wikipedia during the blackout will not be able to read the encyclopedia. Instead, you will see messages intended to raise awareness about SOPA and PIPA, encouraging you to share your views with your representatives, and with each other on social media.

What are SOPA and PIPA?

SOPA and PIPA represent two bills in the United States House of Representatives and the United States Senate respectively. SOPA is short for the «Stop Online Piracy Act,» and PIPA is an acronym for the «Protect IP Act.» («IP» stands for «intellectual property.») In short, these bills are efforts to stop copyright infringement committed by foreign web sites, but, in our opinion, they do so in a way that actually infringes free expression while harming the Internet. Detailed information about these bills can be found in the Stop Online Piracy Act and PROTECT IP Act articles on Wikipedia, which are available during the blackout. GovTrack lets you follow both bills through the legislative process: SOPA on this page, and PIPA on this one. The Electronic Frontier Foundation, a non-profit organization dedicated to advocating for the public interest in the digital realm, has summarized why these bills are simply unacceptable in a world that values an open, secure, and free Internet.

Why is the blackout happening?

Wikipedians have chosen to black out the English Wikipedia for the first time ever, because we are concerned that SOPA and PIPA will severely inhibit people's access to online information. This is not a problem that will solely affect people in the United States: it will affect everyone around the world.

Why? SOPA and PIPA are badly drafted legislation that won't be effective at their stated goal (to stop copyright infringement), and will cause serious damage to the free and open Internet. They put the burden on website owners to police user-contributed material and call for the unnecessary blocking of entire sites. Small sites won't have sufficient resources to defend themselves. Big media companies may seek to cut off funding sources for their foreign competitors, even if copyright isn't being infringed. Foreign sites will be blacklisted, which means they won't show up in major search engines. And, SOPA and PIPA build a framework for future restrictions and suppression.

Does this mean that Wikipedia itself is violating copyright laws, or hosting pirated content?

No, not at all. Some supporters of SOPA and PIPA characterize everyone who opposes them as cavalier about copyright, but that is not accurate. Wikipedians are knowledgeable about copyright and vigilant in protecting against violations: Wikipedians spend thousands of hours every week reviewing and removing infringing content. We are careful about it because our mission is to share knowledge freely. To that end, all Wikipedians release their contributions under a free license, and all the material we offer is freely licensed. Free licenses are incompatible with copyright infringement, and so infringement is not tolerated.

(...)

In carrying out this protest, is Wikipedia abandoning neutrality?

We hope you continue to trust Wikipedia to be a neutral information source. We are staging this blackout because (as Wikimedia Foundation Trustee Kat Walsh said recently), although Wikipedia's articles are neutral, its existence is not. For over a decade, Wikipedians have spent millions of hours building the largest encyclopedia in human history. Wikipedia is a tremendously useful resource, and its existence depends upon a free, open and uncensored Internet. SOPA and PIPA (and other similar laws under discussion inside and outside the United States) will hurt you, because they will make it impossible for sites you enjoy, and benefit from, to continue to exist. That's why we're doing this.

(Extracts from: http://en.wikipedia.org/wiki/Wikipedia:SOPA_initiative/Learn_more. 01/18/2012)

UNIT 3

Definitions and Descriptive language

Defining and describing things, processes and methods

In this unit we will deal with descriptions and definitions. A good use of descriptive language is essential in the materials and methods sections of research articles. We will put special emphasis on the use of complex noun phrases as a means to define and explain scientific concepts. We will see some examples of evaluative language, considering the role of modal verbs and adverbials.

Generally speaking, a definition is a kind of short text that is meant to provide accurate information on a given concept or idea, while an explanation or extended definition connects the details provided in a description with other bits of information providing a logical map into which those pieces of information are interconnected. Descriptions are an important part of definitions. Giving details of how something works or providing physical characteristics of an object are instances where descriptive language may be used. Classification language patterns also play an important role when we try to define complex items, procedures or ideas.

Definitions tend to be neutral regarding the item that is defined, usually no group or personal opinion is given. Descriptions on the other hand may contain evaluative language that in turn may range from positive to negative assessment.

Observe the following definitions:

CCD: CCD stands for charge coupled device. A CCD is an array of light-sensitive diodes called photosites, which generate an electrical signal in response to light photons.

Concrete: Concrete is a hardened building material created by combining a chemically inert mineral aggregate (usually sand, gravel, or crushed stone), a binder (natural or synthetic cement), chemical additives, and water.

LCDS: Liquid crystal displays (LCDS) consist of liquid crystals that are activated by electric current. They are used most frequently to display one or more lines of alpha-numeric information in a variety of devices: fax machines, laptop computer screens, answering machine call counters, scientific instruments, portable compact disc players, clocks, and so forth.

(Read more: *How products are made.* Volume 1 http://www.madehow.com/Volume-1/index.html#ixzz1l3O2Ttze. no highlighted words in the original)

Now observe the following text where the descriptions contain evaluative language:

WMQTool - a wonderful tool for WebSphere MQ

Anonymous writes «WMQTool is an all-purpose graphical tool designed to work upon IBM Corporation's Websphere MQ (formerly MQSeries) products. The current version is developed in JDK 1.4.1 and later. It covers many of the unique features that a Websphere MQ System Administrator requires for administering and monitoring of all Websphere MQ objects. WMQTool 3.0 is having tremendous new features that you will rarely find in any other tool. Download it FREE from www.niratul.com.»

(from: http://www.websphere-world.com/modules.php?name=News&file=article&sid=1176, no highlighted words in the original)

From: David A Gabel, ENN
Published November 16, 2010 09:30 AM

Modern Insecticides' Devastating Effects

Like DDT before it, a new class of insecticides known as neonicotinoids is believed to be causing drastic population declines in bird species. It is so effective at killing insects, that it has deprived birds of their basic food. Some scientists also believe they are behind the decline in bee populations in Europe and the United States known as honey-bee Colony Collapse Disorder.

(http://www.enn.com/top_stories/article/42009, no highlighted words in the original)

Definitions: study the following patterns and examples

1. Words introducing definitions: «is defined as /can be defined as».
2. Introducing concepts or ideas: «deals with», «seeks to understand».

Examples:	Since 1983 the metre has been defined as the distance light travels in a fraction of a second in vacuum. The kilogram is now the only base unit still defined in terms of a prototype. Physics is the study of the natural world. It deals with the fundamental particles of which the universe is made, and the interactions between those particles, the objects composed of them (nuclei, atoms, molecules, etc) and energy.

3. Classification phrases in definitions «is a kind / type of»

Example:	A pest is a kind of animal or plant that damages crops, forests, or property.

4. Phrases explaining the parts of the defined term or its components

«X is made from/of Y», «is made by VB_ING (process),
«W consists of...X, Y, Z...»

Example:	Water is made up of hydrogen and oxigen

5. Definitions explaining purpose:

«X is something designed to...VB / for...N»
«X is a material
«X is an item / concept /
a device / an object ⇨ used to...VB_BASE / for...VB_ING»

Example:	The lawn mower is a mechanical device that literally shaves the surface of the grass by using a rapidly rotating blade or blades.

DEFINE:	SHORT DEFINITION: Write a sentence giving the definition of "pest". LONG DEFINITION: Write a paragraph giving the definition of "energy resource". GIVE YOUR OWN DEFINITION OF: LEDs (Light Emitting Diodes)

Read the definition and description of SCIENCE and then try to write a similar definition for EARTH SCIENCE.

A Brief Description of Science

Science seeks to understand how nature behaves by observing and correlating available factual information. Our understanding of science is therefore based upon, and limited by, the factual information available. In science, fact-based explanations are called «theories.» Theories may be good, bad, or indifferent. It

all depends on the accuracy and amount of the factual information available, and how logically these facts are interpreted.

http://www.fsteiger.com/sci-def.html

Earth Science

(Check your answer at: http://www.sciencemadesimple.com/)

The following terms (bold letter type) are followed by sentences used to make up a complete definition. Try to organise the sentences so that a proper definition comes up:

lake -
an inland body of water,
larger than a pool or pond
river drainage, etc.,
usually fresh water, formed by glaciers,

lanceolate -
broadest toward the base and narrowed to the apex,
several times longer than wide.
shaped like a lance;

leaf -
a lateral outgrowth from a stem
and functions primarily in food manufacture
by photosynthesis.
that constitutes part of the foliage of a plant

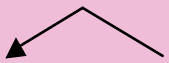
monocotyledons -
a class of angiosperms
and scattered vascular bundles.
having an embryo
leaves with parallel veins,
part of the flower usually in threes,
with only one cotyledon,

morphology -
a branch of biology
a study of the forms, relationships, metamorphoses,
and phylogenetic development of organs
apart from their functions.
that deals with the form and structure of animals and plants,

UNDERSTANDING THE LANGUAGE: COMPLEX NOUN PHRASES

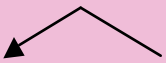
COMPLEX NOUN PHRASES are strings of two or more nouns that form a language unit. They work in a similar way to adjectival modification: the last noun in the string is the one we want to talk about, describe or define. The preceding nouns give us more information on the qualities and characteristics of this noun that we are describing. An example of adjetive modification is: (the) nervious system. An example of complex noun phrase is: (the) control system. Observe the following complex noun phrase example:

If we want to talk about the quality of water we may use a complex noun and say



Water quality

In the following phrase we are talking about «supply»



Oil supply ⇨ ⇨ ⇨ here we are talking about a «supply»

But in the next example we are talking about a «crisis» that is modified with or specified in the preceding nouns:

Oil supply crisis ⇨ ⇨ ⇨ here we are talking about a «crisis»

We may also find combinations of noun modification with adjectival modification as in:

(ADJ) + (N) + (N)
Solar energy use

Public land use

EXPLAIN WHAT THE FOLLOWING COMPLEX NOUN PHRASES MEAN BY REPHRASING THEM IN ENGLISH:

1. waxy citrus leaves
2. leaf growth stage
3. citrus trees leaves
4. TCM damaged leaves
5. tip-burned yellow leaves
6. blister-like eruption
7. easy-peeling, seedless citrus fruits

NOW, DO THE OPPOSITE: WRITE COMPLEX NOUN PHRASES FROM THE PHRASES BELOW.

WORK IN PAIRS: One of you will try to guess which is the right option. The other will read the first line and see if his/her colleague transforms it into a coherent phrase

1. flowers which have not been protected
2. flowers that have a low quality
3. insects which visit the flowers
4. flowers that are rich in nectar
5. flowers that have suffered serious damage

NEXT, translate the following phrases into your mother tongue:

a) conventional agricultural chemicals
b) fresh food products
c) herbicide resistant crops
d) genetically modified maize
e) Monarch Butterfly survival study
f) biotechnology research projects
g) Renewable Energy Promotion Law
h) non-violent direct action
i) illegally logged wood

SketchEngine

THE FOLLOWING SENTENCE CHUNKS PROVIDE EXAMPLES OF NOUN MODIFICATION, MOST OF THE NOUNS ARE MODIFIED BY OTHER NOUNS IN COMPLEX NOUN PHRASES. THE NOUNS ARE CRISIS, ELECTRICITY AND INDUSTRY. READ THE EXAMPLES IN ENGLISH AND THEN TRANSLATE INTO ENGLISH THE PHRASES THAT APPERAR IN SPANISH:

1. a much more serious planetary life-threatening ecological ***crisis***
2. las dos grandes crisis constitucionales británicas del siglo
3. An economic and ***constitutional crisis***
4. The British fuel ***crisis***
5. the Agency has also tackled issues such as the fuel supply ***crisis*** , the impact on meat supplies of the foot and mouth outbreak and the introduction of single-use instruments for tonsillectomies
6. the Country's post war economic and ***fuel crises***
7. nuevas aproximaciones a la crisis global del agua
8. UNU-INHWEH's mission is to respond to the growing global water ***crisis*** and to recommend positive steps to be taken to implement Millennium Declaration Goals in this context
9. Global health ***crises*** - HIV / AIDS and bird flu - represent new threats.
10. El periódico afirmó que el gobierno francés había preparado una ambiciosa declaración llamando la atención sobre la crisis higiénica global y la situación crítica que surge de la falta de medicina de bajo coste en Africa, Latinoamérica y Asia
11. The cost of cost of *nuclear-generated* ***electricity***
12. There are obvious environmental benefits using waste-wood as a heat source rather than unsustainable ones like oil, *nuclear-generated* ***electricity*** and natural gas.
13. Proporcionará la suficiente electricidad sin contaminación como para afrontar las necesidades anuales de más de 13.000 hogares
14. the UK food and drink ***manufacturing industry***
15. la contribución de la industria farmaceutica a la investigación y desarrollo
16. the seminars aim to bring together national and international experts to debate key issues concerning the cultural and *creative* ***industries*** - a crucial part of the international knowledge economy.
17. una campaña dirigida a obligar al gobierno a que regule la industria del seguro de automóbiles
18. FLA ha estado trabajando en nombre de la industria de las finanzas del motor para promover las mejores practicas y encabezar nuevas iniciativas relacionadas con el fraude

The following text talks about a laboratory and how it was designed. The aim of this reading and comprehension exercise is for you to pay attention to the descriptive language used in the text:

New Laboratory Science Building

Project Description

The New Laboratory Science Building (NLSB) was developed to provide state-of-the-art research laboratory space for interdisciplinary research clusters engaged in cutting edge research. Existing science space is currently comprised of 2.8 million gross square feet of space in 54 buildings of varying condition and configuration. Today's scientific research requires modern facilities with properly sized floor plates, adequate floor-to-floor heights, and energy-efficient building systems and building envelopes. Since the future course of scientific research cannot be predicted with exact certainty, it is critical that new facilities create large, flexible and adaptable systems that can easily accommodate growth and changing paradigms.

PURPOSE:

PHYSICAL MEASURES:

REQUIREMENTS:

IDEAL CHARACTERISTICS:

Significant new discoveries have come from work at the edges of the traditional fields of chemistry, biology, physics, and engineering. Entirely new fields such as biomedical engineering have arisen from collaborations between disciplines that once felt little or no reason for dialogue. This new intellectual environment creates the need for new science facilities that are large, flexible buildings that accommodate both social and intellectual interaction.

The NLSB is designed to enable these concepts. The site planning capitalizes upon and seeks to engage the beautiful natural setting at the western edge of Orchard Hill while celebrating the work within.

DESIGN CONCEPT:

The building is designed to link with adjacent buildings and to the pedestrian and infrastructure network in a way that creates both civic space and enhances accessibility.

The building will contain flexible open research labs with equipment alcoves, enclosed support labs, shared platform labs and faculty offices, vivarium, ABSL-3 and BSL-3 labs, conference rooms, colloquia, and food serving areas. Accommodation is made in the plan for a future rooftop greenhouse.

FIND AND LIST ALL NOUN PHRASES IN THIS PARAGRAPH. STUDY HOW THE NOUNS ARE PREMODIFIED:

The following paragraph describes the different phases of the construction. Notice how three phases are distinguished (bold letter type) and pay attention to the use of the future tense to talk about future plans of the project and present tense is used to indicate plans that are seen as a near future concept:

Phased Construction

The first phase of the NLSB will be completely fit out and occupied while ***the second phase*** will be constructed as shell and core space. This shell space will be fit out in the future to accommodate changing research programs. ***A future*** life science ***building*** is planned as an extension to the south.

The NLSB will tie into the Integrated Sciences Building at the ground floor level and will share the ISB loading dock and cooling equipment.

In the paragraph above, which are the verb tenses used to explain the different phases of the construction? Which are the differences between the tenses used here?

Sustainable Design

The building will meet LEED *Silver* standards and include the following:

- Heat recovery chiller plant
- Ventilation energy recovery
- Air quality monitoring system
- Radiant floor heating
- Day lighting controls
- Energy metering systems

....

@ *Write:* Are there any buildings in your university that are dedicated to scientific research? In groups, try to gather as much information as possible about one of these buildings and write a descriptive text that mirrors the one you have just read. Include a description of the purpose of the building, measures, requirements and characteristics, and try to talk about the design concept of that particular building. In your description, imagine the building is not finished yet and try to provide 3 or 4 different phases in the project for this space.

Adapted from © 2006-2011 UMass Amherst Facilities: Planning http://www.umass.edu/fp/nlsb/ 15/06/11

Working with definitions: defining fruit trees

❶ Observe the following definitions taken from the Compendium of Citrus Diseases. In these two definitions about citrus diseases and citrus fruits the writer uses words and phrases such as «are classified as» to organise the definitions. Find and underline the lexical items that are used to organise information in the definitions:

CITRUS TREES

Citrus diseases: The term disease, as used in this compendium, is defined as any departure from the normal appearance, form or functioning of a citrus tree or its fruit. Diseases are classified as infectious (biotic) or noninfectious (abiotic). Biotic diseases are caused various living agents, including bacteria, fungi, nematodes, viruses and certain viruslike organisms. Abiotic diseases are caused by adverse environmental conditions, nutritional and genetic defects, and faulty cultural practices, such as improper application of chemicals.

Flowers and fruit: the citrus fruit is a unique type of berry called a hesperidium. It consist of a rind and juicy flesh with, characteristically, ten segments (carpels) united around a central axis, or core. The rind comprises two parts, an outer, colored portion (flavedo) and an inner, white, spongy portion (albedo). (...) The flesh of the citrus fruit is composed of juice sacs which are attached to the outer part of each segment. Seeds are attached to the inner edges of the segment walls. The number of seeds produced varies greatly according to the cultivar and some cultivars are essentially seedless.

❷ As you may already know, there are many different citrus trees. The following is a definition of lemon. It is defined according to four different parameters or features. For each feature there is a gap in the text: try to decide which parameter is defined in each section.

Lemon (C. Limonia) - This is a small, widely branched (1)____ that grows 10 to 20 feet high. It is thorny and evergreen and its leaves are narrow and ovate and light green. The (2)_____ are in pairs or single. They are tinted purple. The petals are white inside and purple on the outer surface. The (3)_____ is usually pointed at both ends and light yellow. Its flesh is light and its juice sacks are thin. The seeds are ovoid and smooth. The Lemon is (4)_____ its acid juice, which is (5)____ in flavoring and in making various drinks. Lemon peel is candied. Lemon trees are grown as pot plants and outside in regions fairly free of frost. It is commercially important in California; Spain and Italy mostly stock the European countries.

❸ Below you will find the definition of lime. The words that describe the characteristics of the parts of this plant have been taken out of the text. See if you can put them back in the right places:

Lime (C. aurantifolia)

This evergreen tree is small, _____ and _____ branched. Its small, _____ to _____ leaves are _____ green. The _____ flowers are small and produced in axillary _____. The fruit is small, _____ and _____. The pulp is _____ and in sections of about ten. The juice is _____ with a distinctive flavor.

clusters irregularly oblong pale white thin-skinned elliptic greenish acid spiny roundish

❹ When defining plants the preposition «to» is commonly used to express range or variation in relation to size, shape, colour, or taste. Decide which fruit is being described in the expressions that follow:

PINEAPPLE - BANANA - KIWI - MANGO - MANDARIN ORANGE

- Its leaves are small and elliptic to lanceolate and its flowers are small and white.
- The fruit (technically a berry) turns from deep green to yellow or red, and may range from 2-1/2 to 12 inches in length and 3/4 to 2 inches in width.
- The flesh is ivory-white to yellow or salmon-yellow
- The fruits are 2 to 9 inches long and may be kidney shaped, ovate or (rarely) round.
- The oval to cylindrical-shaped, compound fruit develops from many small fruits fused together.
- The oblate (often very flattened at the ends) fruits are orange to orange-red with a loose rind that comes off easily.
- It is both juicy and fleshy with the stem serving as the fibrous core and its flesh ranges from nearly white to yellow.
- The flavor is sweet/tart to acid, somewhat like that of the gooseberry with a suggestion of strawberry.

❺ By now you have read a few definitions of fruit trees. Can you tell which one is defined below? (_____)

The nearly round, 2-1/2 to 5 in. wide fruit is crowned at the base by the prominent calyx. The tough, leathery skin or rind is typically yellow overlaid with light or deep pink or rich red. The interior is separated by membranous walls and white, spongy, bitter tissue into compartments packed with sacs filled with sweetly acid,

juicy, red, pink or whitish pulp or aril. In each sac there is one angular, soft or hard seed. High temperatures are essential during the fruiting period to get the best flavour. The pomegranate may begin to bear in 1 year after planting out, but 2-1/2 to 3 years is more common. Under suitable conditions the fruit should mature some 5 to 7 months after bloom.

(Sources: Whiteside, J. O. (1988) *Compendium of Citrus Diseases*. St. Paul, Minessota. The American Phytopathological Society; and Botany.com. the Encyclopedia of Plants, http://www.botany.com/)

Fig 1. Photo 1

What kind of plant do you think this is?

There are many items you may focus on when describing a plant. You may want to describe for instance its size, shape or colour. If you had to describe it to a colleague, how would you do so?

Making comparisons

The following two cacti look very similar. But they have some differences too. How would you describe the cactus in figure 2?

Fig. 2. Photo 2

Now, observe the following picture and try to do the following:

a) State the differences between Figure 2 and Figure 3.
b) State the similarities between Figure 2 and figure 3.

Fig. 3. photo 3

Colours may change in depth and shades. Look at the following words and decide various ways to describe different tints of «yellow»:

bright orange to bright coral blending to (X) fades to a soft(er) lemon(y) greenish pale golden creamy intense completely

Now do the same with «red»:

Yellow deep pink bright orange

Which of the following words go with «colour» and which may form a word with «shape» by means of suffixation?:

Bright intense cup bell various star strong heart welcoming sword harmonious vibrant lance trumpet vase

Imagine you have to describe the flowers in your garden or balcony. Use the words in the three exercises above and write three sentences.

SPEAKING: ROLEPLAY

Descriptions: Plants

Your teacher may provide you with more pictures with different plant features.

ROLE A

You have ordered some decorative plants for your business entrance hall. But the plants you have received are totally different from the ones you expected. Try to phone the greenhouse and explain your problem. The greenhouse wants to sell you another plant but you don't want to buy it. YOU ARE NOT ALLOWED TO USE THE NAME OF THE FLOWER, IF YOU DO SO, YOU LOSE AND HAVE TO START AGAIN WITH ANOTHER PICTURE.

STEP 1 – Phone Greenhouse Ltd. Greet the other person and ask for the right person to speak to. Use polite language.

STEP 2 – Explain your problem in detail. Make sure that they will deliver what you asked for.

STEP 3 – You don't want any other plant. Say no tactfully.

These are pictures for the two decorative plants you ordered

Poppy

Blue clematis

ROLE B

You work at Greenhouse Ltd. in Spain. A client phones to complain about an order. Try to be as nice as possible. Find the flowers your client wants by taking notes on its description. Then, try to speak about a new «product», a wonderful blue flower that is now available in your greenhouse. Make it interesting for the client, explain how extraordinary its shape and colours are.

STEP 1 – Answer the phone
STEP 2 – Ask your colleagues about the order. Once you have all the information try to solve the problem. Make arrangements for the delivery and exchange of plants.
STEP 3 – Your boss has told you that the more plants you sell, the more benefits you'll get in your wage. Try to sell a new wonderful flower which is sold potted, and do so being as polite as possible and using persuasive language.

These are pictures for the two plants you may offer that are closest to your client's description:

Cornflower (Centaurea cyanus)

Red beautifully shaped camellia flower

ORGANISING YOUR IDEAS: WRITING DESCRIPTIONS

GARDENS: Below is a description of four different types of gardens. Read the texts and then work in groups to design a garden based on some or one of these. You may also be creative and design a garden of the future. Pay attention to the different descriptions and definitions, they may be determined by the usage of the garden, physical description and space arrangement, or even by cultural issues. Write a full description of your garden, draw it and give it a name and a date. If you enjoy creating and describing gardens it may be a good idea to do some Internet research in order to get more information for your inspiration. When doing so pay special attention to descriptive language used for each garden you like.

Texts taken from: The garden and landscape guide. http://www.gardenvisit.com[4]

Temple Garden –2000

Use: The oldest garden survivals are the temple compounds of ancient Egypt. They were used by priests and pharaohs, though members of the public might be admitted on festival days. The design of temples helped to explain the nature of the world and the social order, as we now do through science, religion, art, history and politics. Temple compounds are the oldest surviving manifestation of the quest to make outdoor space as works of art. Sacred groves were associated with temple compounds.

Form: Axial lines were used but the overall geometry was non-symmetrical. Temples were built in rectangular compounds bounded by high walls. The internal space was in part ceremonial and in part laid to gardens. Temples were linked by avenues, lined with trees, sphinxes and statues. The line of the avenue ran into the compound and led through a series of processional gates to a hypostyle hall and then an inner sanctum, the holy of holies. Some of the enclosed land was used to accommodate store houses. Compounds also held sacred lakes, pools, statues, shrines, flower and vegetable gardens. The basic construction materials were stone and mud brick.

Examples: Temple of Luxor, Temple of Hatshepsut, Temple of Karnak

4. http://www.gardenvisit.com/history_theory/garden_landscape_design_articles/historic_design_styles/temple_garden_design_style
http://www.gardenvisit.com/history_theory/garden_landscape_design_articles/historic_design_styles/courtyard_garden_design_style
http://www.gardenvisit.com/history_theory/garden_landscape_design_articles/historic_design_styles/castle_garden_design_style
http://www.gardenvisit.com/history_theory/garden_landscape_design_articles/historic_design_styles/high_renaissance_garden_design_style

Courtyard -100

Use: Space within walled cities was always valuable and expensive. Only the rich could afford small gardens. The poor lived in a single room with a door opening onto the street and no windows. Courtyards were made for specialised purposes, broadly similar to those of the Egyptian domestic garden: outdoor eating, entertaining, growing plants. In towns, they had to be enclosed by high walls owing to the proximity of neighbours and the demands of security and privacy. Walls also created an urban climate, warm in winter and cool in summer.

Form: Three types of courtyard were made, with wealthy city dwellers having one of each type:

1. a yard (atrium) in the centre of the dwelling giving access to other rooms and to the street. The atrium served as a lightwell and ventilation shaft. It was either paved or slightly recessed to catch rainwater.
2. a colonnaded yard (peristyle) ornamented and used as an outdoor living and dining room. The roofed colonnade on the perimeter functioned as a corridor giving access to bedrooms and living rooms. The enclosed yard had pools, fountains, shrubs, flowers, statues and a small shrine. Evergreens were favoured: bay, myrtle, oleander, rosemary, box and ivy. In flowers, the Romans liked the rose, iris, lily, violet, daisy, poppy and chrysanthemum.
3. a horticultural space (xystus) was used for flowers and vegetables and might be decorated with statues, a pavilion and a water features.

Examples: Alhambra, Generalife Garden. Villa Adriana (Hadrian's Villa)

*Castle Garden 1300

Use: Forts were occupied by soldiers and used exclusively for military purposes. From the Middle Ages onwards, castles were places for families to live with their dependents and retainers. Some had small pleasure gardens within their walls, primarily for the use of ladies, children, swains and troubadours. In times of siege, an army, or the population of the local village, would occupy the space inside the outer fortifications and, presumably, trample the garden.

Form: The garden could be a small rectangular, hexagonal or irregular enclosure, inside the outer fortification (bailey). There are many surviving castle spaces where one can see places for such gardens within the inner or outer bailey. No examples survive but there are symbolic illustrations of them in medieval prayer books and romances. They show trellis fencing, flowery lawns, turf seats, tunnel-arbours and a profusion of sweet-scented flowers. Most of the land within the bailey would not have smelt sweet. Castles also had orchards and hunting parks outside the fortified zone.

Examples: Château Amboise, Château Angers, Château Dourdan, Château Montargis, Vincennes Château

*High Renaissance Style 1540

Use: With a departure from the enclosed gardens of the late middle ages, Alberti advised making 'open places for walking, swimming, and other diversions, courtyards, grass-plots and porticoes, where the old men may chat together in the kindly warmth of the sun in winter, and where the family may divert themselves and enjoy the shade in summer ... and have a view of some city, towns, the sea, an open plain'. Medieval gardens had been inward-looking. Renaissance gardens, with their hillside terraces, began to look outward, physically and intellectually. Making a collection of antique statuary became an important garden use. It was a way of looking to history and the fine arts.

Form: The organising principle of high renaissance gardens was first demonstrated by Bramante. He used a central axis to control the layout of house and garden. It integrated a series of rectangular enclosures with terraces at different levels. Flights of steps, alcoves, niches and fountains were disposed in relation to the axis and embellished with statues, fountains and terracotta pots holding flowers and fruit trees.

Some examples are: Vatican Palace, Villa d'Este, Villa Lante, Villa Madama, Villa Medici at Castello (Villa Reale), Villa Pia, Wallenstein Garden Czech Republic, Castello Branco, Chateau de Beloeil, Colonial Williamsburg, Elizabethan Gardens, Haimhausen, Parque del Buen Retiro, Rubenhuis (Rubens House), Villa Imperiale, Villa Medici (Academie Francaise),

READING COMPREHENSION

Read the following sentences carefully. How is negativity expressed when talking about how the level of chemical elements is harmful, that is: Which are the words showing disapproval?

Scottish scallops, worth about £7,000 and due for export to Spain, have been buried alive after being found to be contaminated with heavy metals. The scallop beds at Pentland Firth, between Orkney and mainland Scotland, ***contained*** *unacceptable levels of cadmium and were declared unfit for human consumption. Experts have said that the cadmium may be due either to pollution or to» natural seabed reserves».*

His findings mirror those of other studies elsewhere on the eastern coast. They reached the conclusion after discovering that a number of whales and dolphins washed up dead on the shore between 1987 and early 1991 ***contained*** *«significant» levels of organochlorides and heavy metals in their tissues. The metals included arsenic, cadmium, mercury, copper, lead and zinc, while among the other toxins were DDT, dieldrin and hexachlorobenzene.*

The programme is based on a study carried out last year, which showed that 57 per cent of eastern residents drank below-standard water, and that 36 per cent breathed air which ***contained*** *levels of sulphur dioxide above safety levels.*

Pollution: Water Potato pesticide pollutes rivers <p> A survey by Friends of the Earth has revealed widespread pollution of rivers by tecnazene, a pesticide used to stop potatoes from sprouting. It is applied on 35 per cent of Britain's potato crop. The worst pollution is at sites near outlets from industrial potato washing units and fish and chip shops. Washwater from one chip shop ***contained*** *tecnazene at 15,000 times the level which is safe for fish, while a brook in Somerset recorded levels at up to 520 times the safety limit.*

DESCRIBING PESTS

The descriptions below belong to different pests. Their physical appearance as well as their life cycles and are explained. There is a lot of descriptive language in the paragraphs that follow, try to note down the meaning of unfamiliar words.

Blueberry Bud Mite

Acalitus vaccinii (Keifer) Eriophyidae, Prostigmata

The blueberry bud mite, *Acalitus vaccinii* (Keifer), is an important pest of cultivated blueberries in North Carolina. Early varieties including Wolcott are the usually more severely infested than late varieties.

Appearance

The mite is whitish, elongate and very small. It is about 1/125 of an inch long and, therefore, is invisible to the unaided eye. In the field, rather than examining plants for the mite itself, the presence of the pest is established by looking for the characteristic injury. This injury is most obvious in late April and May.

Citrus Leafminer

Adults of the citrus leafminer are minute moths (4 mm wingspread) with white and silvery indescent scales on the forewings, with several black and tan markings, plus a black spot on each wingtip. The hind wings and body are white. In resting pose with wings folded, the moth is much smaller in appearance (about 2mm). The head is very smooth-scaled and white.

Larvae are minute (to 3 mm), translucent greenish yellow, and located inside the leaf mine. The pupa characteristically is in a pupal cell at the leaf margin. Adults generally are too minute to be easily noticed, and are active diurnally and evenings.

Citrus Mealybug

Physical Description

The citrus mealybug, *Planoccocus citri*, derives its name from the white mealy wax which covers its distinctly segmented body. The soft oval body of the mealybug is ringed by lateral waxy filaments and longer tail-like filaments at the posterior end. The adult female is about 3 mm long while the male is usually smaller. The adult male is gnat-like with a single pair of wings.

Newly hatched nymphs are light yellow and free of wax. Immature males and all stages of females are similar in appearance. Citrus mealybug eggs appear as white cottony masses scattered about on the fruit, foliage, twigs, and bark of the tree.

http://www.ces.ncsu.edu/depts/ent/notes/Fruits/fruitb4.html

Life cycle of cereal leaf beetle

Adult

The adult is a small elongated chrysomelid beetle ≈5 mm long with a metallic, bluish-black head and wing covers (elytra) and rust red to burgundy legs and thorax. Adults overwinter in debris in or near wooded areas often adjacent to the previous season's grain fields. Adults emerge from overwintering in the early spring when daytime temperatures consistently exceed 14°C, and move into small grains and begin to lay eggs.

Eggs

Female cereal leaf beetles deposit eggs individually or in short chains along the midvein on the upper surface of leaves. A single mated female can deposit up to 50 eggs in her lifetime. Eggs are elongate, yellowish orange in color, and are

≈1 mm long. At optimal temperatures (between 22–32°C), eggs complete their development in about 5 days.

Larva

Newly hatched larvae are slug-like and have grayish yellow bodies with heads and legs that are brownish–black. However, body coloration is usually obscured by a black globule of mucus and fecal matter held on the body, giving them a shiny black, wet appearance, especially in later instars. Larvae pass through four instars and typically develop in 10–14 days at optimal temperatures between 22–32°C, with the time divided equally between the four instars. Upon reaching full size (≈5 mm), larvae drop to the soil surface and burrow down to ≈2 inches (5 cm) and pupate.

Pupa

This life stage is rarely encountered in the field, as pupae are small (≈5 mm) and enclosed in earthen cells underneath the soil surface. Pupae are exarate, yellow, and darken with time. Adults emerge after 17–25 days based on soil temperature. New adults emerge as cereal grains begin to senesce and feed on summer grasses and crops before moving to overwintering sites.

(Taken and adapted from: Philips, C.R. et al. (2011) «Fifty Years of Cereal Leaf Beetle in the U.S.: An Update on Its Biology, Management, and Current Research». *Journal of Integrated Pest Management*. ISSN: 2155-7470, Online ISSN: 2155-7470. DOI: 10.1603/IPM11014. Volume 2, Issue 2, pages C1-C5. 2011 Entomological Society of America. http://esa.publisher.ingentaconnect.com/search/download?pub=infobike%3a%2f%2fesa%2fjipm%2f2011%2f00000002%2f00000002%2fart00001&mimetype=text%2fhtml)

READING COMPREHENSION

Two-spotted spider mite (*Tetranychus urticas Koch*)

This generally abundant species has a very wide host range and is an important pest of glasshouse crops. It also attacks hop, walnut and many fruit crops, including black currant, gooseberry, blackberry, raspberry and strawberry; sometimes a serious pest on garden fruit trees growing against walls, especially apricot, nectarine and peach. Less frequently, it occurs in apple, pear, cherry and plum orchards but not usually on sprayed trees. It occurs on various wild trees, shrubs and herbaceous plants but is more numerous on elm.

DESCRIPTION:

Adult female: 0.6 mm long; pale yellowish or greenish, with two dark patches on the body (the overwintering form is orange to brick-red); body oval with moderately long dorsal setae; striae on hysterosoma forming a diamond-shaped pattern. Adult male: similar to female but body smaller, narrower and more pointed. Egg: 0.13 mm across; globular and translucent, becoming pale reddish before hatching. Immature stages: pale greenish with darker markings; the larva is 6-legged.

Following is the description of the two-spotted spider mite (*Tetranychus urticas Koch*). First, a general description of the spider is provided. After this general description, the mite is described according to its different life cycles.

PLEASE ANSWER THE FOLLOWING QUESTIONS:

- Which are the most important data in the general description?
- Which words or expressions tell you how serious the attack of this pest may be for different plants? How is the order of importance indicated?
- If you had to explain the contents of the second paragraph orally, how would you do so? Would you add any words? Provide your partner with an oral explanation about the eggs, immature stages, female and male adults.

The texts below discuss the damages a pest may cause and how to control these pests. Read the extracts and observe how the possible damages are described. Study how the steps that should be followed to control pests are explained, focussing on text structure and sequence patterns. Find the verbs that are used to talk about pest control procedures and those that describe the damage caused by pests.

Two-spotted spider mite (*Tetranychus urticas Koch*)

Damage to Hop

Spider mites damage hops by feeding directly on hop leaves and cones. Leaf feeding by spider mites results in silvering and browning of hop leaves, and reduced plant vigor. Severe infestations can cause complete defoliation and are accompanied by heavy production of webbing that can hinder chemical and biological control efforts. Most economic damage, however, is associated with spider mites on hop cones. Spider mites not only contaminate the cones by their presence, but spider mite feeding on cones results in dry, brittle, discolored (red) cones. Spider mite damaged cones tend to shatter so that both quality and quantity of yield is reduced. When infestations are severe, total crop loss can occur.

Two Spotted Spider Mite Management

Low numbers of mites on hop foliage may be tolerated if weather is mild and sufficient biological control agents (largely predatory mites and coccinelid beetles) are present. However, spider mite populations can build very rapidly, and when mite numbers reach 1 to 10 per leaf, depending on the crop growth, control measures are necessary to prevent populations from reaching damaging levels. Economically effective management strategies based on the use of biological control or host-plant resistance are not currently available (see research page for new developments). Management of Twospotted spider mites on hop is, therefore, dependent on the application of appropriately timed foliar miticides. Scouting to determine the need for appropriate timing of control measures is critical. Fields should be treated only in the pest population is at or exceeds the economic threshold. (...).

Scouting. Begin checking in late-May by removing leaves from hop plants and examining the underside of the leaves for the presence of spider mites using a 10X to 20X hand lens. Early in the season samples can be taken at the 3 ft. to 6ft. level (ca. 1m to 3m). Later in the season (after about mid-June), samples from near the wire are needed to determine the presence of mites in the hop canopy. Several leaves from each of 10 to 30 plants should be sampled depending on field size and the amount of time available.

Threshold. Treat when you have an average of 1-2 adult female spider mites per leaf through June and into early July. Treat when you have 5 to 10 mite per leaf after mid-July. (back to top)

Treatment options. Chemical treatment options are listed in the Pacific Northwest Insect Control Handbook. Because this information changes frequently be sure to check the latest edition of this book, which is available from the University of Idaho Resources for Idaho web page. Be sure to read, understand, and follow label directions. Whenever possible use compounds that are less, or non-toxic to natural enemies in hop fields.

(Taken and adapted from: Department of Plants, Soil and Entomological Sciences. University of Idaho. http://www.cals.uidaho.edu/pses/Research/r_ent_hoppest_twospotted.htm)

The Common Stalk Borer in Corn

Symptoms of Infestation

Damage to corn caused by the common stalk borer is characterized by wilting and/or dying of the upper leaves or by ragged irregular holes chewed in the newly unrolled leaves. The characteristic «dead heart» is caused by the insect boring into the stalk at the soil level and tunneling upward. It may also climb up the plant and tunnel downward into the whorl, creating the ragged holes. A considerable amount of «frass», or sawdust-like borer feces, can be seen in the whorl or coming out of the borer's entry hole in the stalk. Corn plants from 2 to 24 inches tall may be attacked. (...)

Plants damaged by stalk borers are often stunted and/or misshapen and may die. Infested plants (if they survive) may or may not produce harvestable ears. If they do, ears are usually smaller than normal. Those plants that do not produce ears compete with productive plants for water, nutrients and sunlight.

Taken and adapted from: Ric Bessin, Extension Entomologist University of Kentucky College of Agriculture. Department of Entomology, University of Kentucky College of Agriculture. 2010. http://www.ca.uky.edu/entomology/entfacts/ef100.asp

Lesser Cornstalk Borer

Management

Serious damage by this insect is usually limited to late-planted corn grown in dry years on well-drained soils. Rainfall and irrigation will kill many larvae. Soil applied insecticides used at planting for corn rootworms or cutworms may control this pest. Where this insect has been a problem, careful inspection during the seedling stage is important, particularly in drought years. Damage can be reduced significantly by killing or eliminating weeds two weeks before planting. Weed elimination 10 to 14 days before planting also reduces the chances of losses due to black cutworm.

(Taken and adapted from: Ric Bessin, Extension Entomologist University of Kentucky College of Agriculture. Department of Entomology, University of Kentucky College of Agriculture. 2010. http://www.ca.uky.edu/entomology/entfacts/ef129.asp)

«A pest of your own»

- Work in groups of 3 or 4 and design a pest of your own. It can be as crazy or conventional as you like.
- You will be provided with information regarding a real pest (leafhoppers, mites, leafminers ...) which will give you an idea on how to talk about the appearance of the pest, its biology, the damages that it may cause to a particular crop, and its control.
- «Design» your pest. One of the members of the group may draw it, do not spend more than 5 minutes in the drawing process
- The images below are pictures of different pests you may base your work on.

<table>
<tr>
<td> 
http://www.cehwiedel.com/factualreports
/Fauna/Insect/Fauna.Insect.CarpenterBee.htm</td>
<td> 
© Copyright M J Richardson
http://www.geograph.org.uk/photo/1363569</td>
</tr>
<tr>
<td> 
Photo by Bas Kers
http://www.fotopedia.com/items/
flickr-3209147977</td>
<td> 
By gauchocat
http://www.flickr.com/photos/74867807@
N00/519475022/</td>
</tr>
</table>

Prepare an oral presentation of about two minutes. It should include:

- **APPEARANCE (DESCRIPTION)**: Describe colour, size, form
- **BIOLOGY**: Describe the pest's life cicle
- **DAMAGES /INJURIES**: Explain which are the symptoms of infestation and which parts of the plants may be attacked
- **CONTROL**: Discuss with the group which is the best way to control your pest.

The class will vote on the favourite pest among all the pests presented

UNDERSTANDING THE LANGUAGE: Plant response metaphors

Plants and emotion metaphors expressing cause and result

Usually, emotional response is reserved to human beings. But sometimes people transfer their emotions to their pets and talk about them as if they were humane. We hear people saying things like «Ain't she pretty?», «I luv you!» or «you want mama to give you food?» to their favourite animals. Something similar happens with plants: some people talk to them and even serious researchers use emotion metaphors to express things that happen to plants. We talk about «tristeza» in citrus trees and its «severity», «its being the most devastating disease», and we may say that the «trees may collapse under severe conditions», and that «some affected trees may live for quite a number of years while others die within the first 2 or 3 years». Our emotions are aroused by the life/death contrast of the diseased plants and animals in the same way as life and death stories in newspapers trigger our emotional responses. One of these metaphors used with plants is the STRESS metaphor. Stress may be generally defined as follows:

> **Stress**: an emotional and physical reaction to demanding events or stimuli. Such events or stimuli interfere or threaten the accustomed way of life.

Our concepts and ideas about human stress may be transferred to plants and so we use a common vocabulary when talking about human stress and when talking about plant stress. In this sense we may use expressions such as «stress tolerance» or «stress effects» both with plants and people.

However, there are some differences: the causes of stress in people are different from what causes stress in plants. Thus, we say that plants are stressed under certain circumstances and we may talk about anaerobic stress, heat stress, NaCl stress, osmotic stress, salt stress, ABA stress, oxidative stress, temperature stress, drought stress, water stress, cold stress, environmental stress or light stress.

Because emotions have a cause, an origin, or may cause certain reactions, cause/effect patterns and lexis in sentences expressing emotion are frequent when talking about stress in plants.

TASK: The following examples are sentences talking about plant stress in Plant Physiology articles (Physiology is the science which treats of the phenomena of living organisms). Read all the sentences and *a*) highlight prepositions, words and phrases that are characteristic in the stress context considering your knowledge on how stress affects people, *b*) underline words expressing cause and result:

1. «In plants, exposure to photoinhibitory light, ozone, or other environmental conditions that cause oxidative stress can increase O2 levels.»
2. «A number of environmental stresses can lead to enhanced production of superoxide within plant tissues»
3. «Complex changes in cell wall proteins in response to drought stress have been reported»
4. «Accumulation of Sod4 transcript in response to osmotic stress is a consequence of increased endogenous ABA levels in developing embryos»
5. «In leaves of plants growing under high-salt stress, ABA accumulation may assist in the acclimation to salinity»
6. «A recent work analysed the osmosensitive phenotype tps1 mutant under moderate and severe osmotic stress, revealing the strong correlation between the presence of trehalose in yeast and survival under osmotic stress conditions.»
7. «An analogous mechanism may be important for signalling anaerobic stress and regulating the associated changes in gene expression in Equinochloa spp.»
8. «The effect of salt stress on maize leaf growth and shoot development is similar to its effect on lettuce.»
9. «The results from room temperature measurements showed that strong-light stress had little or no effect on wild-type leaves»
10. «Oxidative stress is manifested by tissue damage caused by the oxidation compounds such as proteins, lipids, and nucleic acids»
11. «This confers tolerance to water deficit and salt stress in transgenic rice»
12. «Our studies provide a new insight into the mechanisms of sugar regulation of growth and stress-related genes in plants»

(BASED ON: Dirven, R. (1997) «Emotions as cause and the cause of emotions» in Niemeier, S. and R. Dirven, eds. *The Language of emotions*. John Benjamins: Amsterdam/Philadelphia. 55-83)

HOW THINGS WORK: How systems work

In the text entitled "How does the heat get distributed throughout the house?" you will see how the heat distribution is explained in terms of heat circulating systems and by describing the heat propagation process. Use this text as a model in order to explain one of these:

- How does the natural gas delivery system work?
- How does the gas gauge in your car work?
- There are different kinds of internal combustion engines. Diesel engines are one form and gas turbine engines are another. What is the difference between them?

Q. How Does The Heat Get Distributed Throughout The House?

A. There are basically two ways that the heat from the collector or storage area can reach the rooms of your house. Heat can circulate through a forced air duct system that distributes the warm air. Or it can be circulated as hot water in radiators or baseboard units, with the water being preheated by solar and brought up to the required temperature by the backup system. In many cases, this means that your present heating system can be adapted to distribute solar heat.

A. Naturally, through convection, conduction, and radiation. Conduction occurs when heat moves through a solid. If you've ever touched the metal handle of a frying pan while cooking, you've experienced conductive heat transfer. Convection is how heat moves through air or water. For example, warm air rises because it is lighter than cold air, which sinks. This is why the second floor of a house is warmer than the first floor. Radiation is heat moving as a wave, similar to light. Inside a house, a warmed surface emits heat, (infrared) radiation, that travels toward cooler areas.

Source: *Solar Energy and Your Home: Questions and Answers* (1984) U.S. Department of Energy (DOE) http://www.osti.gov/accomplishments/documents/fullText/ACC0189.pdf

Homework: listen to the lecture «Saving Power at Peak Hours» by Mary Ann Piette and try to summarise its contents.

http://www.osti.gov/sciencecinema/product.biblio.jsp?audiosearch=yes&osti_id=987707. 2008 Mar 19

READING COMPREHENSION

The extracts below explain the process of lipstick making. Read the text carefully paying attention to the phrases used to introduce the different parts of the process. You can underline useful sentences.

Lipstick

To make lipstick, the various raw ingredients are first melted separately, and then the oils and solvents are ground together with the desired color pigments.
...

The Manufacturing Process

The manufacturing process is easiest to understand if it is viewed as three separate steps: melting and mixing the lipstick; pouring the mixture into the tube; and packaging the product for sale. Since the lipstick mass can be mixed and stored for later use, mixing does not have to happen at the same time as pouring. Once the lipstick is in the tube, packaging for retail sale is highly variable, depending on how the product is to be marketed.

Melting and mixing

1. First, the raw ingredients for the lipstick are melted and mixed—separately because of the different types of ingredients used. One mixture contains the solvents, a second contains the oils, and a third contains the fats and waxy materials. These are heated in separate **stainless steel** or ceramic containers.
2. The solvent solution and liquid oils are then mixed with the color pigments. After the pigment mass is prepared, it is mixed with the hot wax. The mixture is agitated to free it of any air bubbles. Next, the mixture is poured into tubing molds, cooled, and separated from the molds. After final touch-up and visual inspection, the lipstick is ready for packaging.
   The mixture passes through a roller mill, grinding the pigment to avoid a «grainy» feel to the lipstick. This process introduces air into the oil and pigment mixture, so mechanical working of the mixture is required. The mixture is stirred for several hours; at this point some producers use vacuum equipment to withdraw the air.
3. After the pigment mass is ground and mixed, it is added to the hot wax mass until a uniform color and consistency is obtained. The fluid lipstick can then be strained and molded, or it may be poured into pans and stored for future molding.
4. If the fluid lipstick is to be used immediately, the melt is maintained at temperature, with agitation, so that trapped air escapes. If the lipstick mass is stored, before it is used it must be reheated, checked for color consistency,

and adjusted to specifications, then maintained at the melt temperature (with agitation) until it can be poured.

As expected, lipsticks are always prepared in batches because of the different color pigments that can be used. The size of the batch, and the number of tubes of lipstick produced at one time, will depend on the popularity of the particular shade being produced. This will determine the manufacturing technique (automated or manual) that is used. Lipstick may be produced in highly automated processes, at rates of up to 2,400 tubes an hour, or in essentially manual operations, at rates around 150 tubes per hour. The steps in the process basically differ only in the volume produced.

Molding

5. Once the lipstick mass is mixed and free of air, it is ready to be poured into the tube. A variety of machine setups are used, depending on the equipment that the manufacturer has, but high volume batches are generally run through a melter that agitates the lipstick mass and maintains it as a liquid. For smaller, manually run batches, the mass is maintained at the desired mix temperature, with agitation, in a melter controlled by an operator.
6. The melted mass is dispensed into a mold, which consists of the bottom portion of the metal or plastic tube and a shaping portion that fits snugly with the tube. Lipstick is poured «up-side down» so that the bottom of the tube is at the top of the mold. Any excess is scraped from the mold.
7. The lipstick is cooled (automated molds are kept cold; manually produced molds are transferred to a refrigeration unit) and separated from the mold, and the bottom of the tube is sealed. The lipstick then passes through a flaming cabinet (or is flamed by hand) to seal pinholes and improve the finish. The lipstick is visually inspected for air holes, mold separation lines, or blemishes, and is reworked if necessary.
8. For obvious reasons, rework of the lipstick must be limited, demonstrating the importance of the early steps in removing air from the lipstick mass. Lipstick is reworked by hand with a spatula. This can be done in-line, or the tube can be removed from the manufacturing process and reworked.

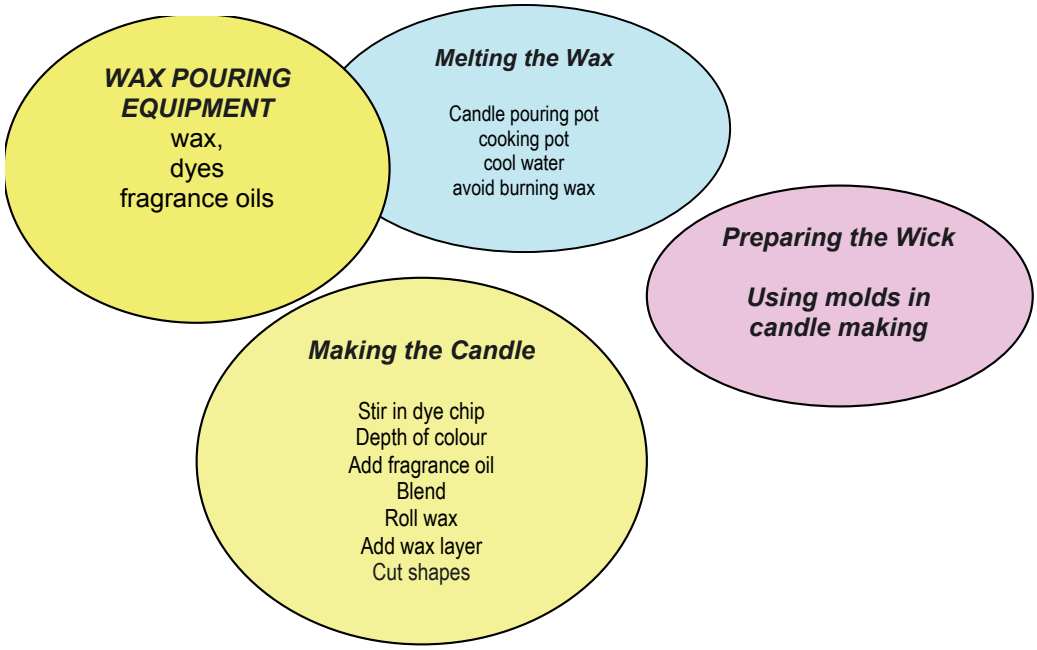
Labeling and packaging

9. After the lipstick is retracted and the tube is capped, the lipstick is ready for labeling and packaging. Labels identify the batch and are applied as part of the automated operation. While there is a great deal of emphasis on quality and appearance of the finished lipstick product, less emphasis is placed on the appearance of lip balms. Lip balms are always produced in an automated process (except for experimental or test batches). The heated liquid is poured into the tube in the retracted position; the tube is then capped by machine—a far less laborious process.
10. The final step in the manufacturing process is the packaging of the lipstick tube. There are a variety of packaging options available, ranging from bulk packs to individual packs, and including packaging as a component in a makeup kit or

special promotional offering. Lip balms are packaged in bulk, generally with minimum protection to prevent shipping damage. Packaging for lipsticks varies, depending on what will happen at the point of sale in the retail outlet. Packaging may or may not be highly automated, and the package used depends on the end use of the product rather than on the manufacturing process.

(From: http://www.madehow.com/Volume-1/Lipstick.html

Now, you are going to write a text explaining how to make wax candles, indicating the different steps to be followed.



WATCH, LISTEN and

SPEAK: PRESENTATION

In the following task you will improve your wax making explanation by watching some videos where more information is given. Listen carefully for the pronunciation of keywords. Then, you will prepare an oral group presentation.

How to make candles using molds
http://www.youtube.com/watch?v=Fj7So14KGFE
Selecting the Right Candle Wax from Candlewick
http://www.youtube.com/watch?v=9QRWFr0hCZI
Scented Candles
http://www.youtube.com/watch?v=mWYodZbCeeU

WATCH AND LISTEN

How languages can help you succeed in international business

1ST WATCH THIS VIDEO:

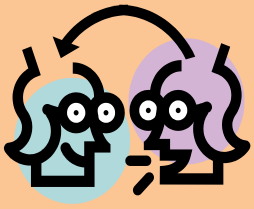
http://www.youtube.com/watch?v=chZ0ysafrRI&list=UUveBMdSn2aEv0_81VndvG2Q&index=1&feature=plcp

2ND Work with 3 or 4 classmates and decide on a European company you want to create. Give it a name. Provide general information on the products and/or services you provide.

Company name	_____
Product/Service	_____
Website	_____
No. of employees	_____
Turnover	_____€
Exports as % of sales	_____%

3RD One of the managers in your company has read the «evidence from research» information on the use of languages that you may find here:

http://ec.europa.eu/languages/languages-mean-business/evidence-from-research/index_en.htm



SPEAKING: PROVIDING INFORMATION

He or she will briefly explain the rest of the group how languages could be part of your company's methods to improve sales

4TH Analyse the explanations some companies give in the link below. Pay special attention to the vocabulary and phrases used to express management strategies (prefer, adopt, importance...):

Learn from these top-performing European SMEs how they improved sales by employing innovative language management strategies.

http://ec.europa.eu/languages/languages-mean-business/smes-experience/index_en.htm

5TH Now decide on the specific language strategy that you will be using in your company and provide a detailed explanation of why and how you will implement that strategy. Write it down in the box below:

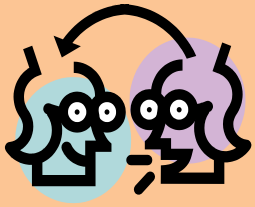
STRATEGY	*Why*	*How*
1.		
2.		
3.		

You can now try to answer this test in order to know what is your company's level regarding the use of languages:

http://ec.europa.eu/languages/languages-mean-business/test-your-level/index_en.htm

MAYBE YOU WANT TO MAKE SOME IMPROVEMENTS CONSIDERING THE TIPS BELOW. The tips are labeled as instructions and are then explained. All the members of the group should read the tips for themselves and chose the one that they feel will be the best option for your company.

http://ec.europa.eu/languages/languages-mean-business/10-tips-for-success/index_en.htm



SPEAKING: SHOWING AGREEMENT / DISAGREEMENT

Now you will have a last meeting on the issue of using languages in your company. Each member of the group will explain their options and provide an explanation. You may start with a sentence like: «I think we must / should use... because...»

If two or more persons have chosen the same option they will have to express how much they agree and why, or emphasise the reasons why they believe that is a good option.

Those of you who disagree or think that someone's choice is not the best option should express disagreement and explain their reasons for not being of the same opinion.

UNIT 4

Written and spoken genres

In this unit we will study a number of written and spoken texts. We will first talk about the structure of research articles paying special attention to the language and content of abstracts. In the second part of this unit we will study spoken texts, examining examples of public speeches, service encounters, interviews and lectures.

UNDERSTANDING THE LANGUAGE

Research Article Format

Scientific articles are written to present research results and have a direct style in order to clearly convey the findings and interpretations of specific areas of knowledge. Research articles are divided into several distinct parts, each with a well-defined purpose. Although the number of sections may vary from one discipline to another and even from one journal to another within the same discipline, most research article sections are widely used when writing academic papers. The following parts may be contained in research articles:

- *Title*
- *Authors and Affiliations*
- *Corresponding author*
- *Abstract or Summary*
- *Keywords, Highlights, Classification Numbers, Nomenclature and Codes*
- *The table of Contents*
- *Introduction / state of the art*
- *Methodology (materials and methods)*
- *Results*
- *Discussion*
- *Conclusions*
- *Acknowledgements*
- *Appendices*
- *References*
- *Footnotes and Endnotes*

The sections highlighted in blue are used in most disciplines when writing academic papers. The title is a very important part of the article, providing synthesised information on the content of the article. Authors have to convey a lot of information in it and that is why most titles are somehow compact or dense in nature. Observe the following example:

▷ A Novel Structure for Vector Control of Symmetrical Six-Phase Induction Machines with Three Current Sensors

In research articles written in English there are some language patterns that are very productive. One is the use of complex noun phrases that are linked via prepositions and may be modified by adjectives. Thus, the first title above can be analysed as follows:

Det. + Adj. + Noun1 + prep + [Noun2 + Noun4 + prep + (Adjective + (advb)Noun5 + Noun6 + Noun7)+ prep + advb. + Noun8 + Noun9]

A + Novel +Structure+ for+[Vector +Control + of + Symmetrical + Six-Phase + Induction + Machines+ with +Three +Current + Sensors]

Another frequent language resource is expressing a method or way to do something or stating the materials employed using the prepositions *by, via, with* or using a gerund:

▷ Determination of antimony in wine by hybrid generation graphite furnace atomic absorbescent spectometry

▷ Simulation and RTDS Hardware Implementation of SHAF for Mitigation of Current Harmonics with p-q and Id-Iq Control Strategies Using PI Controller

The action that is understood as the main aim of the article may be formulated by the use of a gerund (ING-verb):

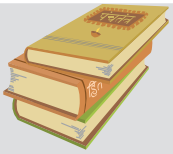
▷ Assessing the impacts of economic and climate changes on land-use in mountain regions: A spatial dynamic modelling approach

The use of words like *analysis, application, determination, design, development, evaluation, experiment, identification, method, process, technique, study* or *system* is also frequent in research article titles. These express the main course of action employed in the research. Their verbal counterparts may also be found in the pattern «VB_ING + N», as in «analysing the results of...»:

▷ Biomechanical analysis of human ligament grafts used in knee-ligament repairs and reconstructions.

- ▷ Design and control of robotic highway safety markers
- ▷ A study of the conditions and mechanism of the diphenylamine reaction for the colorimetric estimation of deoxyribonucleic acid
- ▷ Evaluating structural equation models with unobservable variables and measurement error
- ▷ A robust layered control system for a mobile robot

FINDING INFORMATION



Use the information we have just discussed in the previous section on research article titles. Study and evaluate the following titles discussing with your classmate which is the feature or features discussed above that can be found in the titles below:

- Analysis of relative gene expression data using real-time quantitative PCR and the 2-[Delta][Delta] CT method
- A new method of analyzing thermogravimetric data
- A rapid and sensitive method for the quantitation of microgram quantities of protein utilizing the principle of protein-dye binding
- Systematic analysis of structural data as a research technique in organic chemistry
- Accelerated solvent extraction: a technique for sample preparation
- Cluster analysis: A technique for estimating the synoptic meteorological controls on air and precipitation chemistry--Method and applications
- Living free-radical polymerization by reversible addition-fragmentation chain transfer: the RAFT process
- Dynamic Game Difficulty Scaling Using Adaptive Behavior-Based AI
- Diversity Array Technology Markers: Genetic Diversity Analyses and Linkage Map Construction in Rapeseed (Brassica napus L.)
- Genetic Analysis of Walnut Cultivars in China Using Fluorescent Amplified Fragment Length Polymorphism
- AFLP: a new technique for DNA fingerprinting
- Improving efficiency in mobile robot task planning through world abstraction
- Model continuity in the design of dynamic distributed real-time systems
- Development and evaluation of interactive humanoid robots
- Mixed effectiveness of French agri-environment schemes for nationwide farmland bird conservation
- Identifying proteins from two-dimensional gels by molecular mass searching of peptide fragments in protein sequence databases

UNDERSTANDING THE LANGUAGE: RESEARCH ARTICLES

The title is the first thing to appear in a research article. After the research article title we can find the names and affiliation of authors and some contact phone, webpage or email. Another essential part of the research article is the abstract, which is a concise description of the work carried out by the researchers. Most journals include a list of keywords that determine the main topics and ideas on which the article is developed. These are words or phrases of two or three words that describe the areas of research and topics authors will develop in their paper. Apart from keywords, in some journals authors may be requested to include a list of the *Nomenclature* used in the article (e.g. μ: thermal diffusion length), a list of *Subjects* or main thematic areas under which the article can be included, and it may also list specific *codes* or classifications, such as the Physics and Astronomy Classification Scheme (PACS) or the Mathematics Subject Classification (MSC). A kind of combination between keywords and abstract is a section called *Highlights*, which schematically lists the important issues tackled in the article.

After the abstract and keywords you may find an introduction to the background information on the state of the art of research in the field the article belongs to. The introduction presents the most relevant work in the area and relates it to the work carried out in the article. The introduction may also bring in the working hypothesis of the research. Following the introduction we may find a materials and methods section. Here the authors describe the procedures that they followed and the materials used in the experiments where applicable. When research is based on the participation of humans, the number and profile of participants will be described here. The materials and methods is an essential section since it may determine the extent to which the analysis that is being presented is sound and well-founded.

Following this section is the results section of the article. In this part, researchers usually present figures and data with the explanations of the findings. In the last chapter (chapter 5) we will see examples of statistical data presented in graphs and figures. Next, the discussion section will provide an interpretation of the results. Results and discussion may be presented together in one section. The last part of the article is the conclusion where a balance is made after all the data presented in the previous sections. Conclusions may contain a short summary of the main points that have been demonstrated and also suggestions for further research.

The conclusion can be followed by acknowledgements either to other researchers or to institutions that have funded the research. Acknowledgements may also appear as a footnote in the first page of the article. When there are data that are too long to be presented in the main body of the research paper they may be included in an appendix**.** Appendices may also include data taken from elsewhere.

At the end of the article there is always a reference section where all the quoted investigation pieces are listed. Depending on editorial policies, we may find either footnotes or notes at the end of the article.[5]

We will now pay attention to the language used in abstracts

In the abstract below, observe the different verb tenses that are used. You can see that the article uses the present tense and the passive voice in the past tense and ends with the simple past. The use of the present tense in research abstracts is used to talk about unchanging facts or reality. It may be used in definitions that introduce concepts in the abstract. The passive voice is used in the past tense to describe the procedures and methods that are followed in the investigation. The simple past is used here to talk about the results of those methods or procedures as they were observed in the past after performing the experiment. In the last sentence we go back to the use of the present simple as the authors now determine the conclusions or applications of their research at present. These applications are frequently modified with a positive evaluative word, in this case *significantly*. Note how these positive results are contrasted to other options by means of the phrase *as compared to:*

POSSIBLE ROLE OF TRAZODONE AND IMIPRAMINE IN SLEEP DEPRIVATION-INDUCED ANXIETY-LIKE BEHAVIOR AND OXIDATIVE DAMAGE IN MICE

A. Kumar and R. Garg

Pharmacology Division, University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh, India

SUMMARY

Sleep is *one of the key regulators for maintaining physical, mental and emotional health. Nonrefreshing* ***sleep and depression are*** *common problems nowadays. The present* ***study was designed to explore*** *the protective effects of trazodone and imipramine on 72-h sleep deprivation- induced anxiety-like behavior and oxidative damage in mice. Albino mice* ***were sleep-deprived*** *for a period of 72 h using the grid suspended over water method. Animals* ***were divided into*** *different groups, each consisting of six animals. Trazodone (5 and 10 mg/kg i.p.) and imipramine (10 and 20 mg/kg i.p.)* ***were administered*** *for 5 days starting 2 days before 72-h sleep deprivation. Various behavioral tests (elevated plus maze, zero maze, mirror*

5. Online journals are a fast moving genre regarding the way information is presented and we may come across many new formats. The abstracts in the *Journal of Engineering, Design and Technology*, for example, include sections entitled: purpose; design/methodology/approach; findings; research implications/limitations; practical implications and originality/value, which have a parallel structure to that of the sections of the whole abstract.

*chamber for anxiety and actophotometer), followed by oxidative parameter tests (malondialdehyde, glutathione, catalase, nitrite and protein), **were assessed** in sleep-deprived animals. Treatment with trazodone and imipramine significantly **improved** locomotor activity and **exerted** anxiolytic-like effects in all paradigm tasks (mirror chamber, elevated plus maze, zero maze) as compared to untreated 72-h sleep-deprived animals ($P < 0.05$). Biochemically, both trazodone and imipramine significantly **restored** depleted reduced glutathione (GSH) levels and catalase activity and **attenuated** raised lipid peroxidation and nitrite concentrations as compared to untreated sleep-deprived animals. The **results** of the present study **suggest** a protective effect for trazodone and imipramine on sleep deprivation-induced anxiety-like behavior and oxidative damage in mice.*

Keywords: Anxiety - Locomotor activity - Oxidative stress - Sleep deprivation - Trazodone - Imipramine

(From: Methods and Findings in Experimental and Clinical Pharmacology Vol. 31, No. 6, 2009, pp. 383-387 DOI: 10.1358/mf.2009.31.6.1386992http://journals.prous.com/journals/servlet/xmlxsl/pk_journals.xml_article_pr?p_JournalId=6&p_RefId=1386992&p_IsPs=N&p_ispdf=N)

READING COMPREHENSION

We will now read a number of abstracts from different disciplines. You do not need to understand all the words in the abstracts but try to follow the main ideas when reading them. For each abstract please try to answer the questions that precede it.

ABSTRACT 1

1. State which are the most important verb tenses used in the abstract below and what is their function in this text:

The influence of climatic conditions on the main vine diseases in terms of chemicals application

1Constantin Mihai-Oroian, 1Ioan Oroian, 1Liliana Tomoiagă, 2Maria Comşa, and 1Cristian Iederan

1 University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Faculty of Agriculture; 2 Staţiunea de Cercetare şi Dezvoltare pentru Viticultură şi Vinificaţie Blaj; Corresponding author: Mihai-Oroian C., mihaiconstantin2000@yahoo.com

Abstract. This paper presents research results on the influence of climatic conditions on the occurrence and manifestation of main vine diseases. In the Blaj

wine center the main grapes diseases are blight *(Plasmopara viticola),* mildew (*Uncinula necator*) and gray rot of grapes (*Botrytis cinerea*). To track the evolution of the main pathogens of vines the main climatic factors were monitored (air temperature, precipitation and relative humidity). Climatic conditions specific for each experimental year influenced differently the attack of main vine pathogens, this is due to climatic conditions which are very favorable to pathogens, leading to their appearance on leaves and bunches. Treatments were applied according to the time when the first infection was pointed out and the evolution of climatic factors.

Keywords: vine, pathogenes, climatic conditions, chemicals application.

(From: AAB Bioflux, 2011, Volume 3, Issue 3. *Advances in Agriculture & Botanics-International Journal of the Bioflux Society***.** http://www.aab.bioflux.com.ro)

ABSTRACT 2

1. Which are the personal pronouns used in the following abstract and who do they refer to?
2. How is present and past research marked in the abstract?
3. How do the authors evaluate the research presented in the article?

Heat Conduction: A Telegraph-Type Model with Self-Similar Behavior of Solutions II

I. F. Barna
KFKI Atomic Energy Research Institute of the Hungarian Academy of Sciences
(KFKI-AEKI), H-1525 Budapest, P.O. Box 49, Hungary
barnai@aeki.kfki.hu

R. Kersner
University of P'ecs, PMMK, Department of Mathematics and Informatics
Boszork´any u. 2, P´ecs, Hungary

Abstract
In our former study (J. Phys. A: Math. Theor. 43, (2010) 325210) we introduced a modified Fourier-Cattaneo law and derived a nonautonomous telegraph-type heat conduction equation which has desirable self-similar solution. Now we present a detailed in-depth analysis of this model and discuss additional analytic solutions for different parameters. The solutions have a very rich and interesting mathematical structure due to various special functions.

Keywords: self-similar solution, heat propagation, telegraph-type equation

(From: *Advanced Studies in Theoretical Physics*, Vol. 5, 2011, no. 4, 193-205 http://www.m-hikari.com/astp/astp2011/astp1-4-2011/barnaASTP1-4-2011.pdf)

ABSTRACT 3

1. All the verbs in the following abstract are in the passive voice except for one. What kind of response does this use of the passive provoke in the reader? What does the use of the passive say about the research carried out by these authors?
2. Why are irradiances from external sources investigated?
3. Which are those external sources? Which of them is particularly highlighted because of its importance?

Study of sunshine, skyshine, and earthshine for aircraft infrared detection

Shripad P Mahulikar[1], Santosh K Potnuru and G Arvind Rao[2]
spm@aero.iitb.ac.in
Department of Aerospace Engineering, Indian Institute of Technology Bombay, PO IIT Powai, Mumbai 400076, India

[1] Author to whom any correspondence should be addressed. A von Humboldt Fellow
[2] Present address: Faculty of Aerospace Engineering, T U Delft, The Netherlands

Abstract
Investigations are reported on infrared (IR) signature studies from internal sources of aircraft and helicopters, e.g. engine heated surfaces and exhaust plume. Due to the increasing sensitivities of IR sensors, irradiances from external sources are investigated here, namely sunshine, skyshine, and earthshine. Their role in determining the IR contrast in the 1.9–2.9, 3–5, and 8–12 μm bands is studied. Estimation of earthshine is emphasized because of its tactical significance in low altitude missions and IR imaging studies. A comparison of IR radiance from aircraft's rear fuselage due to internal and external sources shows different roles in the 3–5 and 8–12 μm bands. The important roles of earthshine and temperature-based radiance of aircraft surfaces are identified in the 8–12 μm band.

PACS
89.20.Dd Military technology and weapons systems; arms control
07.07.Df Sensors (chemical, optical, electrical, movement, gas, etc.); remote sensing
85.60.Gz Photodetectors (including infrared and CCD detectors)
42.68.Ay Propagation, transmission, attenuation, and radiative transfer
42.79.Pw Imaging detectors and sensors
07.57.Kp Bolometers; infrared, submillimeter wave, microwave, and radiowave receivers and detectors

Subjects
Electronics and devices
Instrumentation and measurement
Optics, quantum optics and lasers
Environmental and Earth science

(From: Shripad P Mahulikar *et al* 2009 *Journal of Optics A: Pure and Applied Optics.* 11:4. 045703 doi:10.1088/1464-4258/11/4/045703. http://iopscience.iop.org/1464-4258/11/4/045703)

In the article extract below we can see how online devices have allowed for the emergence of new items in the research article that have their origin in the traditional formats but that imply new and more flexible information presentation options. In this sense, at the beginning of this article we can see how there is a preview which contains an abstract and article outline. We may also see that a graphical abstract is provided. This is a kind of pictorial or visual summary of the main issues introduced in the article. In ABSTRACT 6 below you can see a similar device: a thumbnail picture appears next to the article title. This picture shows a representative image from the article. We also find a section called *highlights* which has a similar function to that of abstracts and has the appearance of telegraphic information in a number of short sentences that summarise the main findings or article highlights. Online article presentation usually provides readers with more reading paths than the paper journals. Readers may thus find special links that allow them to read a preview of the article, to download the full text, to read the abstract only, to go directly to other related articles or related reference work articles. Some journals may also have banners that allow readers to access all the figures and graphics in the article. Connections like the ones below are examples of article hyperlink systems.

Show preview | PDF (350 K) | Related articles | Related reference work articles
How to Cite | Author Information | Publication History | Funding Information

More content like this
Find more content: like this article
Find more content written by: Author(s)

A Synthetic Heparan Sulfate-Mimetic Peptide Conjugated to a Mini CD4 Displays Very High Anti- HIV-1 Activity Independently of Coreceptor Usage

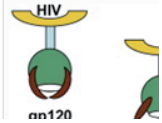
Summary | Introduction | Results | Discussion | Exp. Proc. | Data | References | Supp. Info. | Related Info.

To view the full text, please login as a subscribed user or purchase a subscription. Click here to view the full text on ScienceDirect.

Chemistry & Biology, Volume 19, Issue 1, 131-139, 27 January 2012
Copyright © 2012 Elsevier Ltd All rights reserved.
10.1016/j.chembiol.2011.12.009

PDF 426 KB
Export Citation
Permissions

Graphical Abstract



Authors

ABSTRACT 4

1. When you compare the *abstract* with the *highlights*, what are the differences in the information presented?
2. How does sentence form differ when comparing sentences in the *abstract* and sentences in the *highlights* section?

Photothermal radiometry measurement of thermophysical property change of an ion-irradiated sample

Kyle Horne[a], Heng Ban[a], Andreas Mandelis[b], Anna Matvienko[b]

[a] Mechanical and Aerospace Engineering, Utah State University, Logan, UT 84322, USA

[b] Center for Advanced Diffusion-Wave Technologies (CADIFT), University of Toronto, Toronto M553G8, Canada

Received 21 March 2011. Revised 26 September 2011. Accepted 31 October 2011. Available online 12 November 2011.

http://dx.doi.org/10.1016/j.mseb.2011.10.014, How to Cite or Link Using DOI

Permissions & Reprints

Abstract

Using photothermal radiometry (PTR) an ion-irradiated ZrC sample's thermal properties are measured by fitting frequency-scan data to a theoretical model for the surface temperature. The technique is shown to measure thermal properties without physical contact of a very small sample.

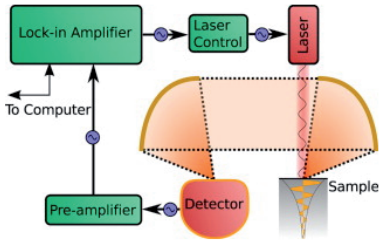
Photothermal radiometry measurement of thermophysical property change of an ion-irradiated sample Original Research Article

Pages 164-167

Kyle Horne, Heng Ban, Andreas Mandelis, Anna Matvienko

Show preview | PDF (350 K) | Related articles | Related reference work articles

Graphical abstract



Highlights

► Ion-irradiated sample measured using photothermal radiometry. ► Results agree with other examinations. ► PTR is demonstrated to be useful for post-irradiation examination. ► Many applications exist in the nuclear community.

Keywords

Ceramics; Microanalysis; Photothermal methods

Nomenclature

μ	thermal diffusion length
α	thermal diffusivity
ω	angular frequency of modulation
$_j$	layer index (subscript)

(From: K. Horne et al. / Materials Science and Engineering B *177 (2012) 164– 167* www.elsevier.com/locate/mseb)

ABSTRACT 5

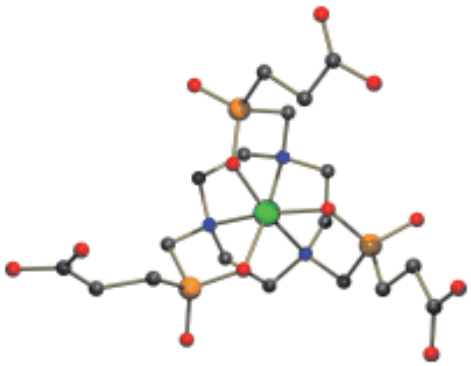
1. Compare the graphical abstracts in ABSTRACT 4 and ABSTRACT 5. In your opinion, which of the graphical abstracts helps more in understanding the information appearing in the written abstract?

TRAP, a Powerful and Versatile Framework for Gallium-68 Radiopharmaceuticals‡

1. Dr. Johannes Notni[1,2,*],
2. Jakub Šimeček[1,2,3],
3. Prof. Dr. Petr Hermann[3],
4. Prof. Dr. Hans-Jürgen Wester[1,2]

Notni, J., Šimeček, J., Hermann, P. and Wester, H.-J. (2011), TRAP, a Powerful and Versatile Framework for Gallium-68 Radiopharmaceuticals. Chemistry - A European Journal, 17: 14718–14722. doi: 10.1002/chem.201103503

Keywords: gallium-68; macrocyclic ligands; molecular imaging; positron emission tomography; radiopharmaceuticals

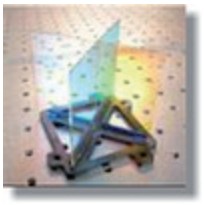


A veritable gallium TRAP: Triazacyclononane-phosphinic acid chelators (TRAP) form highly stable complexes with Ga^{3+} (see figure) extremely efficiently over a wide pH range. Homo- and heteromultimeric bioconjugates can be synthesized in a straightforward manner, all of which renders TRAP a chelator with ideal properties for ^{68}Ga positron emission tomography (PET) imaging agent elaboration.

(from: *Chemistry. A European Journal*. 17.52: 14718-14722. http://onlinelibrary.wiley.com/doi/10.1002/chem.201103503/abstract)

ABSTRACT 6

1. Point out where in the abstract the *Introduction* section ends and the statement of the *purpose* of the article begins, and explain why you choose this point in the abstract.
2. Where in the abstract do authors point at a problem that needs to be solved?
3. Which is the problem with optical fibers? What do the authors propose in order to solve this problem?
4. Which is the next problem authors talk about?
5. Indicate which part of the abstract informs the reader about the Materials and Methods section they will later read in the full article.
6. Indicate where in the article the Results are evaluated and how.



Natural light illumination system

Allen Jong-Woei Whang, Yi-Yung Chen, Shu-Hua Yang, Po-Hsuan Pan, Kao-Hsu Chou, Yu-Chi Lee, Zong-Yi Lee, Chi-An Chen, and Cheng-Nan Chen

Applied Optics, Vol. 49, Issue 35, pp. 6789-6801 (2010)
http://dx.doi.org/10.1364/AO.49.006789

Optics InfoBase > Applied Optics > Volume 49 > Issue 35 > Page 6789
« View Full Text: Acrobat PDF (2397 KB)

OCIS Codes:
(220.2740) Optical design and fabrication : Geometric optical design
(220.4830) Optical design and fabrication : Systems design
(230.1360) Optical devices : Beam splitters
(220.2945) Optical design and fabrication : Illumination design
(080.3685) Geometric optics : Lightpipes

ToC Category:
Geometric Optics

Citation
Allen Jong-Woei Whang, Yi-Yung Chen, Shu-Hua Yang, Po-Hsuan Pan, Kao-Hsu Chou, Yu-Chi Lee, Zong-Yi Lee, Chi-An Chen, and Cheng-Nan Chen, «Natural light illumination system,» Appl. Opt. 49, 6789-6801 (2010)

http://www.opticsinfobase.org/ao/abstract.cfm?URI=ao-49-35-6789

Abstract
In recent years, green energy has undergone a lot of development and has been the subject of many applications. Many research studies have focused on illumination with sunlight as a means of saving energy and creating healthy lighting. Natural light illumination systems have collecting, transmitting, and lighting elements. Today, most daylight collectors use dynamic concentrators; these include Sun tracking systems.

However, this design is too expensive to be cost effective. To create a low-cost collector that can be easily installed on a large building, we have designed a static concentrator, which is prismatic and cascadable, to collect sunlight for indoor illumination. The transmission component uses a large number of optical fibers. Because optical fibers are expensive, this means that most of the cost for the system will be related to transmission. In this paper, we also use a prismatic structure to design an optical coupler for coupling n to 1. With the n-to-1 coupler, the number of optical fibers necessary can be greatly reduced. Although this new natural light illumination system can effectively guide collected sunlight and send it to the basement or to other indoor places for healthy lighting, previously there has been no way to manage the collected sunlight when lighting was not desired. To solve this problem, we have designed an optical switch and a beam splitter to control and separate the transmitted light. When replacing traditional sources, the lighting should have similar characteristics, such as intensity distribution and geometric parameters, to those of traditional artificial sources. We have designed, simulated, and optimized an illumination lightpipe with a dot pattern to redistribute the collected sunlight from the natural light illumination system such that it equals the qualities of a traditional lighting system. We also provide an active lighting module that provides lighting from the natural light illumination system or LED auxiliary sources, depending on circumstances. The system is controlled by a light detector. We used optical simulation tools to design and simulate the efficiency of the active module. Finally, we used the natural light illumination system to provide natural illumination for a traffic tunnel. This system will provide a great number of benefits for the people who use it.

ABSTRACTS 7 and 8

1. What is the hypothesis proposed by the authors of the articles?
2. What evidence do the researchers present to support their hypothesis?
3. Is the hypothesis presented in the abstract now a proven fact?
4. In **ABSTRACT 8** state1) where does the abstract inform on the materials and methods of the research; 2) which part of the abstract is related to the results and discussions section; 3) what is the proposal they make (5 word phrase: Det+Adj+N1+N1); 4) which part of the abstract informs the reader on the conclusion the research reaches to and which exactly is the conclusion?

The availability of mineral plant food

N. M. Comber[a1]

[a1] Department of Agriculture, The University, Leeds.

The assumption that plants feed in the soil just as they feed in water culture solution is unjustified and contrary to the facts. In modification of the usual hypothesis two possibilities are discussed.

1. The absorption of colloids by the plant.
2. The union of the root hair with soil and other mineral particles (so that the plant and the soil form one system) and the dissolution of the particle by the organic matter of the root hair so attached.

(From: N. M. Comber (1922). The availability of mineral plant food. The Journal of Agricultural Science, 12, pp 363-369 doi:10.1017/S0021859600005748; http://journals.cambridge.org/abstract_S0021859600005748)

Some genetic implications of maternal effects—a hypothesis of mammalian growth

A. G. Dickinson[a1]
[a1] A.R.C. Animal Breeding Research Organization, Edinburgh 9

In a cross-breeding experiment involving all types of matings among Friesian, Ayrshire and Jersey cattle, the effect of maternal size has been investigated, based on various comparisons of reciprocal crosses, using data on weight and body size from birth to 2 years of age. Among the thirteen characters analysed, there was a close relationship at 1 month old between the relative maturity of the characters and the relative extent of their maternal effects. This relationship showed that the more mature characters were the least affected by the maternal environment. Cross-bred calves out of a mother of the larger breed were larger at birth than the reciprocal crosses but in all cases this difference disappeared during the first year's growth.

The early expression of the offspring's genotype for body size depended on whether prenatal growth had been favoured or restricted by the maternal environment within limits. Maternal retardation of growth resulted in neonatal phenotypes closely related to their genetic ranking for mature body size, whereas early expression of the genotype is obscured by lavish prenatal conditions.

A mammalian growth model is presented and the results are interpreted in terms of this model. The explanation assumes that temporary advantage is taken, during growth, of variations in the environment, when the latter exceeds a minimal level demanded by the genotype for stable development to normal mature size. This supply and demand hypothesis of growth is discussed in terms of its implications for genetic selection of different types of body characters. The main conclusion is that an understanding of the early environment, particularly the maternal one, may permit selection for some adult characteristics to be carried out at an early age.

From: A. G. Dickinson (1960). Some genetic implications of maternal effects—a hypothesis of mammalian growth. The Journal of Agricultural Science, 54, pp 378-390 doi:10.1017/S0021859600021328; http://journals.cambridge.org/abstract_S0021859600021328)

We will now pay attention to the grammar and style in abstract. Two research abstracts will be shown and analysed regarding their tense and language patterns. As stated elsewhere, the most frequent tenses in abstracts are: present simple, past simple and passive voice. The present simple is common in definitions given in the abstract and in introductory phrases like «this paper analyses/explores/considers/puts forth/concludes, etc.». You can use the auxiliary verb WILL followed by an infinitive to explain the steps that you are going to follow in the research paper. The passive voice is frequently chosen when you talk about procedures and processes that are followed in your article.

Biology, ecology and control of the Penthaleus species complex (Acari: Penthaleidae)

Paul A. Umina[1], Ary A. Hoffmann[1] and Andrew R. Weeks[1]

(1) Centre for Environmental Stress and Adaptation Research, La Trobe University, Bundoora, Victoria, 3086, Australia

Authors and affiliation

Abstract. Blue oat mites, *Penthaleus* spp. (Acari: Penthaleidae), **are** major agricultural pests in southern Australia and other parts of the world, **attacking** various pasture, vegetable and crop plants. Management of these mites **has been complicated** by the recent discovery of three cryptic pest species of *Penthaleus*, whereas prior research **had assumed** a single species. The taxonomy, population genetics, ecology, biology and control of the *Penthaleus* spp. complex **are reviewed**. Adult *Penthaleus* **have** a dark blue-black body approximately 1 mm in length, and eight red-orange legs. Within Australia, they **are** winter pests completing two or three generations a season, depending on conditions. The summer **is passed** as diapausing eggs, when long-distance dispersal is thought to occur. The *Penthaleus* spp. **reproduce** by thelytokous parthenogenesis, with populations comprising clones that differ ecologically. The three pest *Penthaleus* spp. **differ** markedly in their distributions, plant hosts, timing of diapause egg production and response to pesticides, highlighting the need to develop control strategies that consider each species separately. Chemicals **are** the main weapons used in current control programs, however research **continues** into alternative more sustainable management options. Host plant resistance, crop rotations, conservation of natural enemies, and improved timing of pesticide application **would improve** the management of these pests. The most cost-effective and environmentally acceptable means of control **will result** from the integration of these practices combined with the development of a simple field-based kit to distinguish the different mite species.

keywords: Biology - Blue oat mite - Clone - Control - Ecology - Parthenogenesis - Penthaleus

Pay attention to the verb tenses and highlighted words in the abstract and discuss their meaning and function with your classmates and teacher

Biology, ecology and control of the Penthaleus species complex (Acari: Penthaleidae)

Paul A. Umina[1], Ary A. Hoffmann[1] and Andrew R. Weeks[1]

(1) Centre for Environmental Stress and Adaptation Research, La Trobe University, Bundoora, Victoria, 3086, Australia

Abstract. Blue oat mites, *Penthaleus* spp. (Acari: Penthaleidae), **are major agricultural pests in Southern Australia** and other parts of the world, attacking various pasture, vegetable and crop plants. Management of these mites has been **complicated** by the recent discovery of three cryptic pest species of *Penthaleus*, whereas prior research had assumed a single species. The 1--taxonomy, 2--population genetics, 3--ecology, 4--biology and 5--control of the *Penthaleus* spp. complex are reviewed. **(((**Adult *Penthaleus* have a dark blue-black body approximately 1 mm in length, and eight red-orange legs. Within Australia, they are winter pests completing two or three generations a season, depending on conditions. The summer is passed as diapausing eggs, when long-distance dispersal is thought to occur. The *Penthaleus* spp. reproduce by thelytokous parthenogenesis, with populations comprising clones that differ ecologically.**)))** The three pest *Penthaleus* spp. differ markedly **in** their 1--distributions, 2--plant hosts, 3--timing of diapause egg production and 4--response to pesticides, highlighting the need to develop control strategies that consider each species separately.

Chemicals are the main weapons used in current control programs, however, research continues into alternative more sustainable management options.

proposal: 1--Host plant resistance, 2--crop rotations, 3--conservation of natural enemies, and 4--improved timing of pesticide application would improve the management of these pests.

The most cost-effective and environmentally acceptable means of control

will result from the integration of these practices **combined with** the development of a simple field-based kit to distinguish the different mite species.

(From: Umina, Paul A.; Ary A. Hoffmann and Andrew R. Weeks (2004) «Biology, ecology and control of the *Penthaleus* species complex (Acari: Penthaleidae)». Experimental & Applied Acarology, Volume 34, Issue 3-4, pp 211-237. http://rd.springer.com/article/10.1007/s10493-004-1804-z#)

Pay attention to the language patterns and highlighted words in the abstract and discuss their meaning and function with your classmates and teacher. The abstract appears twice in order to facilitate its reading before looking at the highlighted version of the abstract.

Integrated pest management of two-spotted mite *Tetranychus urticae* on greenhouse roses using petroleum spray oil and the predatory mite *Phytoseiulus persimilis*

(*simplified*)

Abstract

From 1995 to 1999, four experiments were conducted on greenhouse roses to assess the effectiveness of the petroleum spray oil (PSO) against two-spotted mite, *Tetranychus urticae* koch (Acarina: Tetranychidae) and to determine how the oil could be most efficiently and effectively used in combination with the predatory mite *Phytoseiulus persimilis* Athias-Henriot (Acarina: Phytoseidae) in an integrated pest management program.

The results showed that 0,5%, PSO applied fortnightly to roses gave excellent protection from *T. urticae* infestation when the mite popullation was not yet established.

However, PSO applied after roses were infested with *T.urticae* above the economic threshold only stabilised populations without reducing them below that threshold.

Populations of *P. persimilis* in the upper and lower canopies were unchanged after two sprays of PSO at 7-day intervals, and application of PSO to the upper canopy was as effective in controlling *T. urticae* in the presence of *P. persimilis* as spraying the entire plant.

Combining PSO with *P. persimilis* gave better control of *T.urticae* than using *P. persimilis* alone. The most cost-effective use of PSO in the presence of *P. persimilis* is, therefore, to apply spray only to the upper canopy. This will not affect control of powdery mildew with PSO.

Comparison of a control program for *T. urticae* based on the monitored use of synthetic miticides with that based on calendar application of PSO revealed that both gave equally effective control. The benefits of combining PSO and *P. persimilis* in an integrated pest management program for *T. urticae* on roses over a program based on synthetic fungicides are discussed.

Integrated pest management of two-spotted mite *Tetranychus urticae* on greenhouse roses using petroleum spray oil and the predatory mite *Phytoseiulus persimilis*
(*simplified*)

Abstract

From 1995 to 1999, four experiments were conducted on greenhouse roses to assess the effectiveness of the petroleum spray oil (PSO) against two-spotted mite, *Tetranychus urticae* koch (Acarina: Tetranychidae) and to determine how the oil could be most efficiently and effectively used in combination with the predatory mite *Phytoseiulus persimilis* Athias-Henriot (Acarina: Phytoseidae) in an integrated pest management program.

Four experiments *were conducted* on greenhouse roses

→ to assess the effectiveness of the petroleum spray oil against two-spotted mite, *Tetranychus urticae* koch (Acarina: Tetranychidae)

and

→ to determine how the oil
could be most efficiently and effectively *used*
in combination with the predatory mite *Phytoseiulus persimilis*

in an integrated pest management program.

NOTE: Against ⟷ In combination with

The results showed that 0,5%, PSO applied fortnightly to roses
gave excellent protection from *T. urticae* infestation when the mite population was not yet established.

→ However,
PSO applied after roses were infested with *T.urticae* above the economic threshold

... only stabilised populations without reducing them below that threshold.

Populations of *P. persimilis* in the upper and lower canopies
were unchanged after two sprays of PSO at 7-day intervals,

and

application of PSO to the upper canopy was

as effective in controlling *T. urticae* in the presence of *P. persimilis*
as spraying the entire plant.

Combining PSO with *P. persimilis*
gave better control of *T.urticae* than using *P. persimilis* alone.

The most cost-effective use of PSO in the presence of *P. persimilis* is, therefore, to apply spray only to the upper canopy.

This will not affect control of powdery mildew with PSO.

Comparison of a control program for *T. urticae* based on the monitored use of synthetic miticides
with that based on calendar application of PSO
... revealed that both gave equally effective control.

The benefits of combining PSO and *P. persimilis* in
an integrated pest management program ①

for *T. urticae* on roses

over a program ② based on synthetic fungicides are discussed.

(From: O. Nicetic, D.M. Watson, G.A.C. Beattie, A. Meats and J. Zheng (2002) Integrated pest management of two-spotted mite *Tetranychus urticae* on greenhouse roses using petroleum spray oil and the predatory mite *Phytoseiulus persimilis. Experimental and Applied Acarology*. 2001. 25 (1) 37-53, DOI: 10.1023/A:1010668122693. http://www.springerlink.com/content/q0373m798339uuu8/)

Make the following sentences passive:

1. People apply mathematics in many different activities.
2. People use the binary scale in electronic computers.
3. A combination of two elements forms a chemical compound.
4. People form the square of a number by multiplying the number by itself.
5. In the binary scale people express numbers by combinations of 0 and 1.
6. We usually use decimals rather than fractions for scientific purposes.
7. Journalists, who seldom have a knowledge of statistics, frequently mislead the ordinary citizen.
8. People develop new products every day.
9. People call mathematics the language of science.

10. It is easier to perform mathematical operations with computers if we use the binary system instead of the decimal system.
11. People use electronic computers for many different purposes.

Maria Damanaki, European Commissioner for Maritime Affairs and Fisheries
Where does fish come from?
SlowFish Opening Conference Genoa, 27 May 2011
Reference: SPEECH/11/393 Date: 27/05/2011

http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/11/393&format=HTML&aged=0&language=EN&guiLanguage=en

⇨ Directions:

- In this exercise we will pay attention to the language and structures used in public formal speeches.
- If you want, you may try to present part of this speech to the class by reading it out. In order to do so properly, you will need to practice both pronunciation and intonation working with this text and with the help of your teacher.

What is this text?

The text is a transcript from a speech given at the SlowFish Opening conference. Please read the text and then answer the questions. The modal verbs in the text have been highlighted for this exercise but were not highlighted in the original. Underlining belongs to the original text.

Maria Damanaki

European Commissioner for Maritime Affairs and Fisheries
Where does fish come from?
SlowFish Opening Conference

Genoa, 27 May 2011

Minister Romano, Mr. Burlando, Mr. Petrini, authorities, ladies and gentlemen,
It is a real honor to address an audience of informed citizens who care about what we eat and how it gets to our table. And I know that when it comes to fish, many of you are not just *informed* citizens, but rather *concerned* citizens.

We hear that fish resources are depleted. That fish contains dangerous pollutants. That it is sometimes sold under false labels. We hear that big amounts of fish are thrown overboard because they were caught by mistake.

So what should we do?

Well, we can probably change the way we eat; but we definitely have to change the way we fish.

As Commissioner for Maritime Affairs and Fisheries, I am mainly responsible for that: the way we fish. But today I will attempt to give you a few ideas on both the way we eat and the way we fish, as they are more closely connected than one would think.

Because fish is a shared resource, the EU has exclusive competence for its conservation. Over the years the Common Fisheries Policy has become complex, with too much detail decided at central level, which makes it harder to implement and to control; more importantly, too much focus is put on short-term economic interests, which too often seem to prevail over environmental considerations. Instead, we **must** turn this around and hinge our actions on sustainability – and sustainability only.

This combined effort - towards decentralisation and towards sustainability - is at the heart of the proposals that I am soon going to put forward to change the way we fish.

With the reform of the Common Fisheries Policy, I hope to introduce a new approach to fisheries management, based on a way of fishing that does not prevent fish from reproducing and growing. A new way of fishing that respects sensitive areas like spawning grounds or sensitive habitats and that spares non-target species such as seabirds, cetaceans and sharks. A new way of fishing which avoids unwanted catches in the first place and phases out the practice of discarding them overboard.

In other words I am pushing for an ecosystem approach to fisheries management. At the same time, I also believe that the new system should adapt to each region's heritage, tradition and know-how; the fishing industry itself, with its irreplaceable expertise and knowledge of the seas, **should** play its part in the conservation of resources and come up with the best solutions to achieve sustainable and efficient resource use.

I want this reform to mark a real step forward towards sound marine management, which is the basis for a sustainable future for our fishermen, particularly small-scale fishermen, and our coastal communities.

However, ladies and gentlemen,

No matter how well we progress towards these objectives, there is one thing that can undermine all our conservation efforts: illegal fishing. By harvesting stocks unsustainably, illegal fishing can destroy habitats and disrupt ecosystems. And it is not just a crime against the environment: it also distorts markets with unfair competition, damages law-abiding fishermen and erodes consumer confidence.

Last year, the EU introduced important legislation that makes control much more effective, punishes wrongdoers and makes fish traceable through every step of the market chain - from the net to the plate.

We make use of electronic technologies for data collection and checking; we have inspectors all over Europe; and we even introduced a point system, similar to the one you have in Italy for driving licences [«**la patente a punti»]**: people who are repeatedly caught fishing illegally, end up losing their fishing licence.

So we have declared zero tolerance against illegal fishing. But we aren't stopping there: we are already onto the next steps, and these involve new traceability tools based on genetics, genomics and forensic techniques....

Yes, it sounds like science fiction, but we do have the technology: we can determine exactly where each fish comes from, as you will hear in the press conference later this morning. Just like it's done in crime detection, we might decide to use modern molecular technology to spot fraud in our sector.

Mr Petrini, please rest assured that we will go the extra mile to ensure that eco-labels may not be falsified or circumvented; that once the product reaches the stores, the consumer can be confident it has been fished sustainably.

Ladies and gentlemen,

As informed citizens, you know that fish is universally acclaimed as a healthy component of our diet. We all know it is rich in protein, but it's not just that: its prime value lies in the fact that it contains clusters of brain-specific nutrients, the omega-3 fats, which our body cannot produce, and must get from the diet.

These fats, DHA and EPA, affect mental health throughout our life cycle. Scientists have connected poor mental development of babies with insufficient supplies of DHA during pregnancy. Later, DHA and EPA influence educational performance, aggressive behavior, depression, senility and Alzheimer's disease.

Fish also helps regulate blood pressure, thus reducing the risks of heart attack, and blood sugar, which is good for weight loss and diabetes. It is a source of vitamins and minerals, it helps combat osteoporosis.... **Should** I go on?

I think I made my point, but let me add this: fish is also quick and easy to cook. For me it's the only healthy and acceptable form of «fast food»!

So, don't stop eating fish; we **should** keep consuming it, and consuming lots of it. As long as it comes from sustainable sources!

As to where all the necessary fish should come from, we know that stocks **can** produce more if fished at sustainable levels: so if we make the effort for some time, we can expect that, in the medium term, the fish populations will rebound.

And some of our efforts are paying off already: today, 37% of the stocks we have studied are being fished at sustainable levels. Only last year this figure was 28%. According to scientists, there are 11 stocks that we should stop fishing altogether. Last year there were 14.

Naturally, we also need to look for ways to sustainably develop fish farming, both on land and marine. Aquaculture is part of the supply solution - and an important source of growth, jobs and stability for the sector.

To conclude, ladies and gentlemen,

I carry a dual responsibility here. On the one hand I have to ensure that Europeans get as much seafood as they need; and on the other I have to make sure that natural resources are not over-exploited: that they are used sustainably and with respect for the marine natural balance.

I know that public opinion is in on the reform of the common policy. A recent poll shows that people want the fish in the shops to come from non-overfished sources, and hundreds of thousands have signed a petition against discards in the UK alone.

But I equally expect some opposition to my proposals - both from parts of the fishing industry and from the political levels - and that's why I need your support.

As informed citizens who care about production methods and cycles; as fish consumers; or as members of an industry which is too often struggling against external forces such as the economic crisis, rising fuel prices or climate change impacts: I ask you to support the reform.

There is a lot you can do: convince your MEPS and national Ministers to choose foresight. Make them see that the environment cannot always heal itself and that in this business, what we do to nature, we do to ourselves. Pressure them not to give in to short-term economic interests but to go for the common good.

If you are here today, it's because you care. You don't want to leave our children a degraded planet with diminished resources. You feel you are part of a single society with a shared responsibility and a moral obligation to make things right.

Italian Nobel Prize Rita Levi Montalcini said that civil society («**una società civile globale**») can create opportunities to reduce our environmental impact. The key lies in this awareness.

I'm here to tell you that I care too. Let's make this reform an important step towards healthy, sustainable and ... slow fish for all.

Thank you.

PLEASE ANSWER THE FOLLOWING QUESTIONS:

1. Which are the greetings used in this speech?
2. At the beginning of the speech, how do you know that it is a formal speech?
3. How does the speaker introduce her topic? What is her discourse strategy?
4. What is the aim of the first question she asks?
5. Which are the emphasizers used in this speech? Please, underline them. What is their purpose?
6. Find a sentence where the commissioner states the aim of her speech.
7. Find the sentences where she declares her personal political intentions regarding the issue of sustainable fishing.
8. Observe the modal verbs in the text that are in bold letter type. Which is the purpose of those modals in the sentences they appear in? What is their meaning?
9. How does the commissioner signal that she is going to finish her speech?
10. How does the speaker ask the public to take action?
11. Find all the adjectives in the text and write them down in the table below.
12. How many of these do you use when you speak in English? Do most of these adjective have anything in common?

ADJECTIVES

FOCUS ON FORM

After answering the questions, draw a circle around the speech transition signals that appear in the transcript and that are used to organise the discourse in this speech. Then, imagine you are going to give a public speech about a topic you are interested in. It may be illegal wood cutting or the purpose of an imagined company in which you are a leader. Think about a specific audience when preparing your speech. Try to give a short speech using adequate transition signals, some emphasizers and evaluative adjectives. You may prepare the speech in small groups and then one of you can present it to the rest of the class.

NOTES: TRANSITION SIGNALS	NOTES: EVALUATIVE ADJECTIVES

SPEAKING: INTERVIEW

⇨ Directions:

- In this exercise we will pay attention to interviews and the language used in them. You will also try to work with intonation patterns.

What is this text?

The transcript below is an interview with a Botanist taking place in an office. S1 (speaker 1) is the interviewed botanist and S2 (speaker 2) is the interviewer. Blue colour in the transcript means there are two people talking at the same time. Red colour means that the speaker highlighted in red says something while the other speaker has not yet finished his speaking turn.

What are we going to do with the text?

Work in groups of three. Two of you will be speaker 1 and speaker 2. These two students will try to read the conversation aloud and the third student will help them and give her/his opinion on whether it is possible to follow the conversation and will also discuss how to do it better and tell them when they forget to use some of the information provided. The third student will also pay attention to interaction timing. Don't worry if you do not know the meaning of all the words.

Once the conversation is read out properly, decide (the three of you) which words or expressions in the text are typical of an interview, both from the point of view of the interviewer and the interviewed.

Title: *Interview with Botanist*; Rackham Div: BS; File ID: INT175SF003
Ó R. C. Simpson, S. L. Briggs, J. Ovens, and J. M. Swales. (1999) *The Michigan Corpus of Academic Spoken English*. Ann Arbor, MI: The Regents of the University of Michigan

(the two speakers have already been talking for a while)

....

S2: right oh oh yeah that's going to come up again a a a bit later um... right up to date now, uh Bob Shaeffer's retired. you're left as the single curator of of fungi. is that gonna affect what you do very much or is that?

S1: yeah it means i have less time to be as, diverse as i have been **[S2:** uhuh **]** and i have had- starting to shed, some kinds of research, because i just don't have time, and that's

S2: because of the curatorial uh thing and that r- right? okay

S1: so i'm star- and because... my mission i guess is better defined with the herbarium rather than an_ as a as- associate curator. **[S1:** mhm **]** where i had m- minimal curatorial **[S2:** oh yeah **]** responsibility i could interpret my, research a lot broader, than i could, you know (couldn't) now.

S2: so automatically even whether Bob was still here as a as a curator you, you hafta, you know **[S1: well]** work with Rich or whatever it is and (xx) or the technician?

S1: (a lot) with the technician yeah. **[S2:** yeah **]** and... the other, part of that is is that, i've gotten into a rather large project and it's starting to, it's, scary i'm not sure i'm gonna get it finished and uh, that means i'm gonna have to shed some stuff **[S2:** right **]** in order to finish that project.

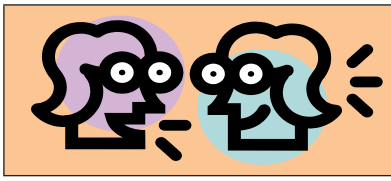
S2: there's a new hire coming who's sort of w- working on the molecular level **[S1:** yeah **]** on vascular plants who's gonna have

S1: i'm hoping to **[S2:** that **]** parasitize him yeah

S2: oh right. <LAUGH S1> i mean this is_ there's another person with your kind of experimental **[S1:** yeah **]** right? bench sort of interests technical interests right. so that's gonna?

S1: different, different problem **[S2:** right **]** different group of organisms but, some of the techniques are the same.

S2: oh okay...



SPEAKING: INTERVIEW

⇨ Directions:

- In this exercise we will pay attention to differences between written and spoken texts.

What is this text?

The transcript below is an interview between a female native speaker who is a member of an English Language Institute (speaker 2), and a non-native graduate student (speaker 1). Blue colour in the transcript means there are two people talking at the same time. Red colour means that the speaker highlighted in red says something while the other speaker has not yet finished his speaking turn. A hyphen appears when one of the speakers starts saying something, does not finish and then starts again (a false start).

What are we going to do with the text?

The text will be read out by two students or the teacher and one student. After reading the text aloud, we will try to give an answer to the following questions:

Which is the main topic of the conversation?

Find at least three aspects of the text that called your attention because they are different from what you usually find in a written text. Discuss these features with the class.

Find the hyphens in the text. What do they tell you about the nature of conversation?

Find words that are repeated one after the other in the same line. What kind of words are these? Is there one kind of word that is repeated more frequently? Why do you think this is so?

Title: *Graduate Student Research Interview* ; 2 Rackham Div: NA; File ID: INT425JG002
Ó R. C. Simpson, S. L. Briggs, J. Ovens, and J. M. Swales. (1999) *The Michigan Corpus of Academic Spoken English*. Ann Arbor, MI: The Regents of the University of Michigan

(the two speakers have already been talking for a while)

....

S2: right... so when did you get, to thinking about, um, environmental issues and... doing, a nat- you know, think about natural landscapes say as opposed to farming and

S1: oh, i ju- i just never felt, really, comfortable doing what i was doing **[S2:** uhuh **]** i actually was going into, we had the chance of becoming an, agronomic engineer, i'm an agronomic engineer, in, systems of agricultural production, **[S2:** okay **]** that's that's my, my thing, **[S2:** mhm **]** basically, like like what i was telling you **[S2:** yeah **]** and then that's the other thing, the other mm, you can also, go for, agronomic engineer in, uh, natural_ in renewable natural resources **[S1:** mm mm **]** so you could do... any of that, **[S2:** yeah **]** you have to pick **[S2:** yeah **]** you wanna go into farming you wanna go into natural resources **[S2:** right **]** and um, i was going into natural resources but then i had, to, i came to Ame- to the U-S and got, to study English and stuff **[S2:** mhm **]** in nineteen ninety (that) i was telling you **[S2:** mhm **]** that uh, messed me up a bit. so when i came back i wasn't uh, not in, a very good situation **[S2:** yeah **]** the professors, that i, was planning on, taking classes, with **[S2:** yup **]** weren't teaching those classes anymore, and, and the T-As, were my classmates of last year **[S2:** yeah **]** and i didn't like that **[S2:** yeah, yeah **]** and uh, so then i decided, that the farming thing was easier, and i just needed the degrees that **[S2:** mhm **]** anyway i was gonna get a Master's after that **[S2:** mhm **]** so that i, that i just didn't need to, put up with all the hassle that **[S2:** yeah **]** (it meant) **[S2:** yeah **]** the other thing involved. so actually i was, i was thinking about it, **[S2:** before yeah **]** (xx) about it before

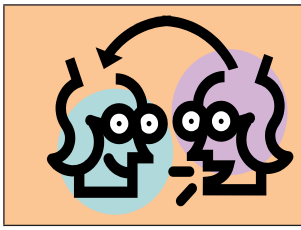
S2: right, right. how'd you pick Michigan?

S1: uh... i actually did a, search **[S2:** mhm **]** went to a library in Pasadena, when_ back when we were living in California my wife and i **[S2:** uhuh **]** uh... no i wasn't living there actually one of those (xx) that i (xx)... i just went there **[S2:** mhm **]** and sat for a couple of days and, **[S2:** yeah **]** programs and, schools and, all of that, and i, picked, like... forty-something schools **[S2:** <LAUGH> mhm, mhm **]** out of there, sent the letter, to all of them i mean actually sent, made the letter made forty-three copies and said, okay this is me and this is what i do, **[S2:** mhm **]** this and this i'm interested in this and this. do you do this do you do that. **[S2:** mhm mhm **]** and they sent me an application in, the mail. **[S2:** yeah **]** and then they came, all this, envelopes, **[S2:** <LAUGH> right, right **]** at home and it was like, yeah, Lamar university at Beaumont Texas... **[S2:** <LAUGH> uhuh **]** and it was like **well** two thousand students **well** i don't think i'm gonna go out there i'm just, not gonna **[S2:** yeah **]** wanna go there **[S2:** yeah **]** unless they offer me, lots of money. so, uh,

i like that. **[S2:** yeah **]** and then uh, then i picked like six. **[S2:** uhuh **]** Michigan, Wisconsin, Duke, and stuff. **[S2:** mhm **]** and uh Ohio State actually. **[S2:** yeah **]** everybody wanted to kill me when i <LAUGH S2> told them that i, was supposed to go to Ohio State... **[S2:** uhuh **]** so, i, so i sent, actually sent_ applied for the programs **[S2:** right **]** got accepted in, Ohio State, Wisconsin. the Duke thing they wanted me to certify that i had forty thousand dollars **[S2:** uhuh, uhuh **]** and uh... i, thought it was, too disrespectful. **[S2:** yeah **]** and i (decided)... (why would i?) **[S2:** right **]** and, and then, so uh, i was actually going to Ohio State. **[S2:** uhuh **]** because they had been, more, more supportive. **[S2:** uhuh **]** (they more) were, understanding. (xx) **[S2:** mhm **]** i just told them i'm, you know i'm here now. i'm marrying an American citizen immigration has no, business with me **[S2:** yeah **]** you don't have to do anything with immigration, or anything **[S2:** uhuh **]** so i can come, or go, so, don't ask me for money or, all those things **[S2:** yeah **]** if i pay_ can pay for tuition that should be enough for you **[S2:** mhm mhm **]** and they said yeah that's fine **[S2:** uhuh **]** so, and then they assigned me an advisor and i was talking my excitement and all that **[S2:** yeah **]** i was ready to move **[S2:** yeah **]** and uh, then i get this letter from Michigan... you've been accepted, such and such and such **[S2:** mhm **]** and then they, talked about the Master's project thing, and it sounded really good, **[S2:** yeah **]** like the thing we're doing now **[S2:** yeah **]** and uh... so i came, to go to Michigan **[S2:** hm' **]** see what happened. **[S2:** yeah **]** because of the reputation of the school, **[S2:** uhuh **]** like the natural resources, program, at this school is like, rated one or two in the nation **[S2:** yeah **]** so it's, you always wanna... take advantage of those things.

S2: right. right. yeah. and the Ma-, the Master's project does sound like it was, pretty appealing to you, and th-, that it still is, that the, um, **[S1:** yeah **]** that it really fits your own, **[S1:** yeah it is **]** goals

end of exercise



SPEAKING: ASKING FOR THINGS

Title: Science Learning Center Service Encounters Transcript ID: SVC999MX148
Ó R. C. Simpson, S. L. Briggs, J. Ovens, and J. M. Swales. (1999) *The Michigan Corpus of Academic Spoken English*. Ann Arbor, MI: The Regents of the University of Michigan

SU-m: can i get a P-C computer?

S1: actually we don't have one right now. [SU-m: oh] there's a waitlist if you wanna sign up.

SU-m: okay oh

S1: we have a regular computer if you want.

SU-m: do they have disk drives?

S1: mhm

SU-m: okay

S1: i just need your M-Card *<SCANS CARD>*

SU-m: thanks. *<PAUSE:14>* you wouldn't happen to have change for a dollar would you?

S1: actually no, sorry.

SU-m: do you know where i can get change, anywhere?

S1: um, Chem Stand downstairs maybe or, i wo- are you using it for vending machines? cuz they take dollars.

SU-m: i'm using it for the, copier.

S1: the copier takes dollars.

SU-m: okay

Title: Science Learning Center Service Encounters Transcript ID: SVC999MX148
Ó R. C. Simpson, S. L. Briggs, J. Ovens, and J. M. Swales. (1999) *The Michigan Corpus of Academic Spoken English*. Ann Arbor, MI: The Regents of the University of Michigan

S5: someone helping you?

SU-f: i'm not sure if she checked_ um i need the Chem two-sixteen exams.

S5: oh. <*PAUSE:07*> you have your M-Card?

SU-f: yeah.

<*PAUSE:10*>

S5: there you go.

SU-f: thanks.

Title: Media Union Service Encounters Transcript ID: SVC999MX104
Ó R. C. Simpson, S. L. Briggs, J. Ovens, and J. M. Swales. (1999) *The Michigan Corpus of Academic Spoken English*. Ann Arbor, MI: The Regents of the University of Michigan

S3: can i help you? hi.

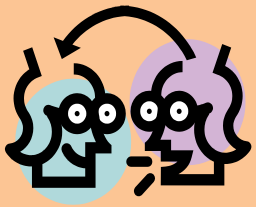
S18: yes, i'm looking for room sixteen.

S3: okay, all the rooms are behind us kind of

S18: okay, [S3: and the s-] i only found up to fifteen <*LAUGH*>

S3: okay. if you'll go straight [S18: uhuh] and make a, right around the corner [S18: uhuh] go through the double doors you'll pass the copy room, and it'll be on your right hand side, if you'll pass it, and around the corner make left. it's right next to the elevator. [S18: okay.] it's kind of, <*GESTURE*> so you're going straight [S18: okay] you're making right, [S18: right] and then, make left around the corner. [S18: okay.] you'll get in there.

S18: okay, thank you.



SPEAKING: ASKING FOR THINGS

ROLEPLAY 1

ROLE A) Imagine you are trying to find a book in your university library. This book is a specialised dictionary. Please ask the librarian how to find that book.

ROLE B) The librarian should give as much information as possible, including how to get to a specific floor and shelf in the library.

ROLEPLAY 2

ROLE A) You are trying to find your tutor's office. She teaches Biology and her name is Prof. García. Her office room number is TC1327DD. You are not sure if it is today that you have your appointment with her. Ask the person in the service desk to phone her before you go to her office and ask her if you are right on the day and time of the appointment.

ROLE B) You work at the information service. A student is trying to find a teacher. You should help the student as much as possible.

ROLEPLAY 3

ROLE A)

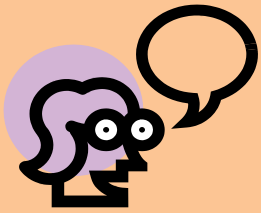
You want to use a computer in the computer room. All computer rooms are managed from the IT Services Desk located at the entry of the building.

- Ask the person in charge what you need to do in order to use a computer.
- Ask if it is possible to change your library card password because you always forget it.
- You will need to print a couple of pages.
- Next week you have to write a research project and you will need to use the computers with your classmates. Find out if there is any small room you can work in.

ROLE B)

You are responsible for the organisation and use of the computer room. There are certain rules a student must follow if they want to use a computer:

- You must be registered as a university student.
- You will need your library card to go into the IT Services Desk.
- A number of computer rooms are available for use 24 hours a day, 7 days a week; others are available for use during a specific timetable when there is no teaching in those rooms.
- Before you start using a PC in the rooms on campus, the screen is blank. This is because all of the PCS are set to power down if they haven't been used for a while. Switch it on by pressing the power button on the front of the box and after a few moments you should see a screen inviting you to login.
- You will need to type in your IT Services username and password.
- Your password to IT Services facilities, including the PCs, is changed using the following web page: uni.de.itservice.edu. you will find a computer icon on the PC desktop, it provides easy access to changing your password.
- Some computer rooms are bookable and should be booked in advance.
- There is one laser printer in each room, prints should be paid in the IT Service Desk when you leave the room (number of copies are registered in your computer and go directly to the IT Service computers). Prints are 1ct each.



SPEAKING: LECTURES

Title: Graduate Physics Lecture
Academic Division: Physical Sciences and Engineering
Transcript ID: LES485MG006

Ó R. C. Simpson, S. L. Briggs, J. Ovens, and J. M. Swales. (1999) *The Michigan Corpus of Academic Spoken English*. Ann Arbor, MI: The Regents of the University of Michigan

(...)

S1: today, what i'd like to do, is to finish up our sort of, first seven weeks of the course which are taking eight and a half weeks, of, of the... interaction of classical fields, with, atoms or molecules... and later on today we'll start, some aspects of the quantized nature of the field. the assignment for next time looks long, but it's actually much shorter than all, all of our other assignments, because, we're now entering into an area, where... it's not so, much my area of expertise so that, i can't make up such long problems, uh, hopefully educat- problems that are educational but, these are more standard s- problems which, are fairly simple and take only a page rather than, three and four pages so even though it looks longer, it's really, one of the shortest assignments of the, of the semester. the material, actually on that again, the material that we're going to be starting to use, is really, covered pretty well in, Mandel and Wolf so that, starting with the quantized field i think that if you use the text and i i emailed you, various sections that we're covering, i think that'll help you and you'll be able to go ahead. in fact one of the homework problems i think is actually solved at the end of the Wolf, and also, the first volume of Cohen-Tannoudji's book, on uh Introduction to Electrodynamics, interaction of atoms with fields is on reserve at at the uh, science library, that's also, covers this the material. but it's also covered in almost any, basic quantum optics book. but before we get there let's start and just_ i wanted to finish up again, what we had last time on the Ramsey fringes. the physical experiment here and developed by Ramsey, is one in which you have something an atomic beam, that passes through two field regions. and the idea here is to get a line shape eventually, that will, be narrower in frequency than, you would've, had if you did, C-W spectroscopy, and you would've been limited by the transit time the amount of time the atom stays in the, field interaction regime. here we're assuming that the atom really, doesn't spend very much time in the field interaction regime we're assuming short pulses, but that there's a time interval between pulses, which, in the atomic rest frame is just L over V-X, where V-X is the longitudinal velocity, and V-Z is the transverse velocity or V-perpendicular, in this case. so the idea of the experiment is you detune the laser field, from the, atomic transition by a certain amount, you send the atoms through, and you measure the population of the atoms, just as they exit, the field region, you can do this in a number of ways field ionization, or just probing it with another, if it's in the R-F domain with another radio frequency field. does everyone understand the experiment?

PLEASE ANSWER THE FOLLOWING QUESTIONS:

1. Before the lecturer starts talking about the topic of her lecture, can you find features in the lecture transcript that indicate this is a speech transcript?
2. How does the lecturer refer to the work that has already been covered in the subject and to the work ahead? Which connectors and time words are used with this aim in mind?
3. Which is the sentence that marks the beginning of the lecture once the lecturer has ended her comments regarding the subject and its development throughout the course?
4. In this text you can see how in spoken discourse people tend to utter very long sentences and it is sometimes difficult to follow such sentences. With a partner, choose one full sentence and try to understand and translate it.
5. What is the question she asks to check if her students are following her explanations?

Title: Spring Ecosystems Lecture Transcript ID: LES425SU093 Academic Division: Biological and Health Sciences
Ó R. C. Simpson, S. L. Briggs, J. Ovens, and J. M. Swales. (1999) *The Michigan Corpus of Academic Spoken English*. Ann Arbor, MI: The Regents of the University of Michigan

(...)

S3: alright great. the topic for today's lecture is river floodplains, and what we're gonna be doing is_ first i wanna talk about, the larger picture what it means, a watershed is and what drainage basins are. and then we'll look at some specific drainage patterns which are actually, on page ninety-five i think, yeah in your coursepack. and then we'll talk about the different processes, that are, that go on surrounding a river, followed by the specific landforms of the floodplain, the climate of the floodplain, soils and vegetation of the floodplain. and then if we have time we'll look at slides, of, um last week's lab, when we went to Sharon Hollow. okay, so the first thing, is talking about this idea of a watershed, and what that means and so up here on the board i wrote this definition there, there're a variety of definitions about, of watersheds, or of a drainage basin, but this one seems to be pretty inclusive, saying that it's the area of land, that drains to a single outlet, and it is separated from other watersheds, by a divide. and you've heard you know of the Continental Divide, that is the, the largest watershed that we can think about in North America, and if water falls, if a drop of water falls to the west of the continental divide it eventually makes it out to the Pacific, Ocean and then if it falls to the east of the continental divide it makes it out to the Atlantic Ocean. so that's a broadscale watershed um, with that divide being the Continental Divide. and i'll show a couple of pictures of other_ of the Huron watershed, and um, so you can see what those different flow wa- flow pathways are, into the watershed and what's draining. but what it amounts to is a system of channels, which is also referred to as a drainage network. and i kind of like this, this quote out of this um,

article i was reading that said, that this, system of channels represents nature's most effective means, of getting water off of the land. okay so, we really_ it's important that we understand the processes that are going on in floodplains and understand that, this is a natural, process in the landscape, and that um you know it's not good for vegetation to be sitting in all this water, and so, this is just a series of networks, that allows um, the water to get removed from the landscape. so <PAUSE0:15> okay this is a picture showing, the traditional watershed divide, and this c- this picture only shows, the deep groundwater flow pathways, that are coming. so you can see that, the groundwater here, is all flowing into the stream, and this is a separate, this is a separate watershed or a separate drainage basin so, here's the divide that separates the two right there... now it's important to understand though, that, not only does ground water, which is called base flow does_ not only does ground water flow, into um, this stream and get carried away, but also the r- s- more surface, flow or runoff, that's either just very um, not very far beneath the surface, or it runs across the top of the surface. and so, those are both, important elements, contributing to how, a particular drainage basin gets drained, into the channels that are draining it.

PLEASE ANSWER THE FOLLOWING QUESTIONS:

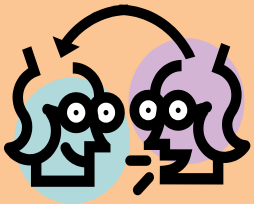
1. What is the topic of this lecture?
2. How does the lecturer organise the content of her lecture? Which are the discourse organisers or phrases she uses in order to enumerate the steps she will follow to introduce each of the parts of her lecture?
3. What is the definition she gives for watershed?
4. Find a phrase in the lecture that means the same as *drainage network*.
5. What is the aim of watersheds?
6. What is the function of the word so before the <PAUSE0:15>?
7. Which are the verbs and the demonstrative pronouns that the lecturer uses in her explanation of the picture at the end of the lecture transcript?

WATCH, LISTEN AND OBSERVE

In the video: «The future of nuclear energy»:

1. How does the lecturer greet the audience?
2. Does the speaker use humour as part of her lecture? Provide one example.

(http://mitworld.mit.edu/video/447/)



SPEAKING: JOB INTERVIEWS

Work in pairs. Two students will decide which role to play: either interviewer or interviewed. Choose **one** job offer from the adverts below. The interviewer may use some of the questions below to design their interview according to the job.

The Interviewer should choose questions according to the job they are offering. Do not ask all the questions in the list. The interview should not exceed 5-10 minutes. Decide the things you will value most in the candidate's answers. If your ad states that no previous experience is required do not expect the candidate to have any, or if (s)he does think how to rate that experience.

The Interviewed may use the same questions to anticipate the possible questions and the possible answers.

The Interviewed student should be ready to be asked a question they do not have an answer for or about a kind of experience you do not have: what would you say then?

Before you get started, you should have a look at the questions in the following page.

What do you think are your strengths and weaknesses?

What are your career goals?

What do you find most and least attractive about this position?

Why should I hire you?

What skills, experience and training would you bring to this job?

Tell me more about yourself

What other experiences have you had that qualify you for this job?

What are you most proud of about yourself?

What was the last book you read, film you saw, or sporting event you attended? Give me your views on it

Can you describe your personality in three words?

Are you good at maths?

What are your computer skills?

How many languages can you speak?

Why did you choose your previous job?

Why did you leave your last job?

What do your workmates say about you?

What kind of salary expectations do you have?

How well do you communicate in public?

Are you good at speaking in company meetings?

What would your previous boss say about you?

Why are you interested in this position?

Can you describe yourself?

What are the things that motivate you?

How do you define or explain what success is?

Describe the relationship that should exist between a supervisor and those supervised.

How do you work under pressure? Can you give me an example of a problem you had at work and how you dealt with it?

Are you good at convincing other people about your ideas?

Do you like team work?

Can you adapt easily to different people and situations?

Are you creative at work? Give me an example

SAP Plant Maintenance Specialist

Location: **Federal Way**
Posted on: **January 23, 2012**

Job Description:
Title: SAP Plant Maintenance Specialist
Location: USA-WA-Federal Way

At Weyerhaeuser, our most valued resources aren't only the trees and timberlands we oversee. Our employees are the real reason we've been in business for over 100 years. Their skill and ingenuity have made Weyerhaeuser one of the leaders in timberland management, and manufacturing and distribution of wood products in the world.

This position will primarily focus on business process and data support for the SAP Plant Maintenance application used within Cellulose Fibers' 8-mill system. It will directly report to the CF Director - Maintenance and Engineering, and will have a strong dotted line relationship to the IT Director - Cellulose Fibers.

The role provides expertise with the SAP Plant Maintenance for each of the mills, including support training in the processes and best practices, defining new requirements, evaluating/auditing current use, developing metrics reporting, and providing documentation. Up to 50% travel is required.

Key Functions
Work with business users to achieve strategic objectives as defined by the Manufacturing Services leadership. Develop a strong SAP Maintenance Work Practices user group across the mills, and take a leadership role in ensuring measurable results, implementing best practices, and guiding any new enhancements. Duties will range from conducting on-site training in SAP work order basics to development of advanced reporting and work flow strategies.

Requirements
A minimum of 8 years of relevant professional experience, 5 years working with the SAP Plant Maintenance module.

Demonstrated capability to work safely, be highly motivated, team oriented, and self directed. Must be customer focused and performance driven. Strong verbal and written communication skills. Demonstrated capability to learn new technologies.

Desired qualifications include: Current experience with the Weyerhaeuser SAP environment, familiarity with Cellulose Fibers mill environment, and an understanding of SOA practices in work flow management and equipment reliability.

An understanding of maintenance methods, such as RCM, and common metrics used to measure maintenance department effectiveness. 3 years of exposure to mill maintenance workflow or store room management. Business or Engineering degree, or equivalent experience.

Weyerhaeuser is an Equal Opportunity Employer building a capable, committed, diverse workforce.

Keywords: Seattle, SAP Plant Maintenance Specialist, Other, Federal Way, Washington

(Adapted from: http://greenjobs.greenjobsearch.org/a/jobs/find-jobs/q-Weyerhaeuser)

Job Details

Principio del formulario

Requisition Number 12-0020
Post Date 1/19/2012

Title Landscape Gardener Internship

City Asheville
State NC
Employment Status Reserve Staff
Department LND-Entry Grounds

Description

This inrternship position is available May through August, generally working Monday through Friday, 40 hours a week. The Landscape Gardener intern will learn valuable skills in landscape maintenance, turf maintenance, IPM, plant ID, soils, seasonal displays, irrigation, and other aspects of the Horticulture field. Students will work in varied environments utilizing their broad knowledge in Horticulture to complete tasks. This is the most diverse Intern position offered. Application deadline is March 2, 2012.

Requirements

Applicants must be enrolled in an accredited college or university program and must receive credit for this internship position.

There must be a willingness to work in all weather conditions. Applicants must also be able to lift 50 lbs, have a valid driver's license, and be able to work independently. This position will require a physical exam.

(From: https://www8.ultirecruit.com/BIL1001/JobBoard/JobDetails.aspx?__ID=*BB8ED77923951947)

Engineer

Anchor QEA, an environmental science and engineering consulting firm, is seeking a full-time **ENGINEER** in its **Seattle, WA** office

The engineer will have a minimum of 5 to 10 years experience on environmental waterfront projects. Candidates for the position should have a M.S. degree in coastal, geotechnical, or environmental engineering. Responsibilities for the positions include: project management, engineering analysis and design, report preparation, field investigation, client interaction, construction bid document preparation, construction oversight, and mentoring to more junior staff. P.E. License or ability to obtain P.E. License within one year is highly desired. Candidates must have experience in all or several of the following: dredging and disposal projects, remedial design, contaminated sediments assessment and remediation, environmental liability and strategy development, aquatic habitat restoration, waterfront facility development, seismic assessment, familiarity with federal and state shoreline regulations and permits. Strong written and verbal communications skills are a must.

Anchor QEA employs 300 highly motivated people in offices around the U.S. We are committed to fostering a work environment that is conducive to the personal and professional growth of each employee. This is accomplished through a company philosophy that combines teamwork, open communication, shared benefits, participation in the life of the company, shared opportunities and job sculpting. We all strive to contribute to a friendly, supportive, and fun work environment.

Qualified applicants please visit the following link to apply:
https://home.eease.com/recruit/?id=1160621
http://www.anchorenv.com/careers/pdfs/seattle_engineer.html

Engineer

Company	Siemens Energy, Inc.
Division	SEI - Energy Sector
Functional Area	ENG - Engineering
Location	GA - Alpharetta
Req ID	108975
Job Type	Regular
Job Time	Full-Time
Experience Level	Senior Level
Required Education	Bachelors Degree or equivalent experience
Required Travel	25%

Company Description
The Siemens Energy Sector is the world's leading supplier of a complete spectrum of products, services and solutions for the generation, transmission and distribution

of power and for the extraction, conversion and transport of oil and gas. In fiscal 2009 (ended September 30), the Energy Sector had revenues of approximately EUR25.8 billion and received new orders totaling approximately EUR30 billion and posted a profit of EUR3.3 billion. On September 30, 2009, the Energy Sector had a work force of approximately 85,100.

Who designs your future? You do. Working within our global company, you can design the career of your dreams. We have over 200 offices in 101 countries providing you the opportunity to see the world or stay in your own back yard. Do you want to invent new technologies? Collaborate with other brilliant minds? Create the future with your ideas? At Siemens, you can.

Siemens is an Equal Opportunity Employer encouraging diversity in the workplace.

Job Description

Combustion Turbine Controls Engineer

- Advanced understanding of process control for W Frame, V frame and/or GE Combustion Turbines
- Understanding of power generation equipment and systems, with advanced knowledge or major equipment, specifically for Combustion Turbines.
- Skills and knowledge of field devices such as sensors and actuators.
- Ability to perform verification and checking activities on designs produced by other Project team personnel.
- Ability to schedule work and estimate hours and staffing requirements to accomplish proposed tasks.
- Ability to resolve discrepancies between design and system requirements including the Human-Machine Interface.
- Interpret customer design input in the form of P&ID's, specifications, written descriptions or functional (SAMA) diagrams and apply the requirements to the system hardware or software design and configuration.
- Experience in directing and supervision of small project teams or task groups. Ability to lead in a team environment.
- Ability to travel to and support of commissioning activities at site for extended periods.

Basic Requirements:

- Bachelor's degree in Electrical, Mechanical or Controls Engineering 6+ years of work experience as a controls engineer on turbines
- Knowledge of Siemens TXP/SPPA T3000 a plus.
- Travel requirements for this position would be up to 25%

(Adapted from:
https://careers.peopleclick.com/careerscp/client_siemens/external/gateway.do?functionName=viewFromLink&jobPostId=361882&localeCode=en-us&source=Indeed&sourceType=PREMIUM_POST_SITE)

Job Title: FARM MANAGER

Industry Category: **Farming / Ranching**
Grower/Shipper/Packer
Job Function: **Production/Operations**

Description
A California based grower/packer/shipper is seeking a highly qualified Farm Manager with strong industry knowledge and desire for upward mobility to join their quickly growing company. The Farm Manager will be responsible for supervising and coordinating activities of departments engaging in planting, cultivating, harvesting and packing approximately 1200 acres of vegetables crops.

Job Responsibilities
- Manage the Farm Office, Harvest and Labor Department, Post Harvest Packing and Farm Operations Department.
- Responsible for the overall direction, coordination, and evaluation of all units.
- Interview, hire, and train employees.
- Plan, assign, and direct work.
- Appraise performance for all employees.
- Reward and discipline employees.
- Address complaints and resolve issues.

Special Requirements
- 15 + years of experience as a Ranch Manager.
- Bachelor's degree or university program certificate.
- Knowledge of vegetable industry quality standards and harvest procedures.
- Ability to speak Spanish a plus.
- Strong analytical skills.
- Synthesizes complex or diverse information; Collects and researches data; Uses intuition and experience to complement data; Designs work flows and procedures.
- Knowledge of Outlook Contact Management systems; Database software; Excel Spreadsheet software and Microsoft Word Processing software.

Compensation and Benefits
$90,000 - $120,000, Annual Bonus, Medical & Dental Benefits, Profit Sharing Plan, Vacation, Sick, Relocation Assistance

Compensation and Benefits:	
Salary Range:	**Min:$90,000 Max:$120,000**
Medical Plan:	**Yes**
Dental Plan:	**Yes**

(Extract adapted from: http://www.producecareers.com/jobDetails7068/FARM_MANAGER.aspx)

UNIT 5

Analysing and synthesising written and visual information

Within this unit the skills developed in previous units are revised so that students are able to reinterpret the text information of a specific communicative mode and convert it into a different format according to specific needs or guidelines. In this unit we will see:

- How to convert an outline to text and vice-versa
- How to provide a written explanation of the information contained in a graph
- How to summarize a long text in an extended abstract or summary
- Reformulating a text to demonstrate the validity of an opinion or a proposal

Focussing on the following skills:

- Ability to apply acquired knowledge and background information
- Ability to adapt different types of texts
- Analysis and synthesis skills
- Ability to organize and plan

Describing and interpreting the data presented in visual aids

In order to start understanding the contents of a graph, you should first pay attention to the title, read what is on the x-axis and on the y-axis. This way you will know the main information points that are being presented. In some graphs like pie graphs, there are no axes and it is the chart that illustrates percentages in the shape of shares or portions: you can observe the amount of something that corresponds to each of the elements that are being analysed.

Next, find out what are the units in which data are presented. Are they in hundreds, thousands, millions, percentages...? Do they represent centimetres, kilometres, miles...?

Then, try to observe what kinds of patterns are there in the data. Do numbers oscillate? Do they go up or down? Are they steady?

Now you have the basics to get started. Try to think of how the patterns you see in the graph relate to other things you know about the issue that is being presented. There are several ways in which information may be presented in visual ways. In research articles we can find tables, line and bar graphs, pie charts, flowcharts, figures and drawings or photographs. The function of visual aids is not decorative, they are meant to complement, illustrate and clarify the information given in the text.

Although the information contained in visual aids is on the whole clear, it usually requires some written comment or interpretation on the part of the authors and the relationship between all pieces of information is discussed. Not all the information should be described, though.

It is usual to introduce the information with a general observation and then describe or comment on the most significant or important information.

There are some phrases that are very useful when trying to explain graphs, some of which are schematised in the following outline:

Visual Aids:
PHRASES INTRODUCING the INTERPRETATION OF DATA or A GENERAL COMMENT ON THE INFORMATION PROVIDED

Chart 1 / Figure 2 shows the percentage of ...

As can be seen	in		chart 2
	from	Ø	table 4 figure 1
According to		the	chart table
As (is) shown in			diagram graph

It can be seen from the graph that ...
The vertical axis shows / illustrates / exemplifies .... sth.
The horizontal axis compares ...

In fact / on the other hand : elaborate or expand the previous piece of information.

As much as / Only : draw attention to significant items

EXPRESSING CONTRAST:

In relation to	twice	-er / -est	
		as large	
	3 times	as high	as ...
		as many	

Compared with / double / half the percentage / number of sth. (population, consumption) trebles, treble in number / to triple the number of, triple an amount

Let us now see an example of each of the most common visual aids in research articles.

The visual aids that follow –unless stated otherwise- are taken from an article by Stanley Fore and Thabani Mudavanhu.[6] The numbers of figures and tables are kept as they appear in the article. We will first observe one of the tables presented in this article. Tables are used to present complex numerical data. Topic information is given in the first row and is divided into the specific areas that need to be analysed. The participants or items for which data are studied appear in the first column. Thus, the corresponding numbers of participant/item behaviour regarding this topic appear under each column.

Year	Actual (m^3)	Target (m^3)	Design target (m^3)
2001	48,647	65,000	85,000
2002	67,072	72,000	85,000
2003	68,334	72,000	85,000
2004	65,458	72,000	85,000
Average	64,878	70,200	85,000

Table I.
Production volume output trend

Table I. *Production volume output trend*

This table shows the production volume output trend in the period from 2001 to 2004 in a chipping and sawmill company.

Graphs

Line graphs

Trends are more easily observed in line graphs than in tables. Line graphs provide data trends and direction over a specific period of time. The figure below shows a line graph indication the percentage of plant utilization of over a period of 12 months. The main vocabulary used in the description of the line is given below.

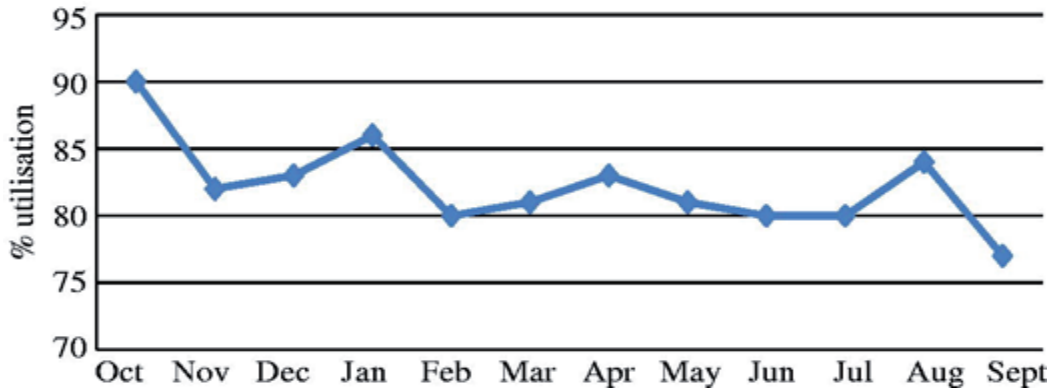
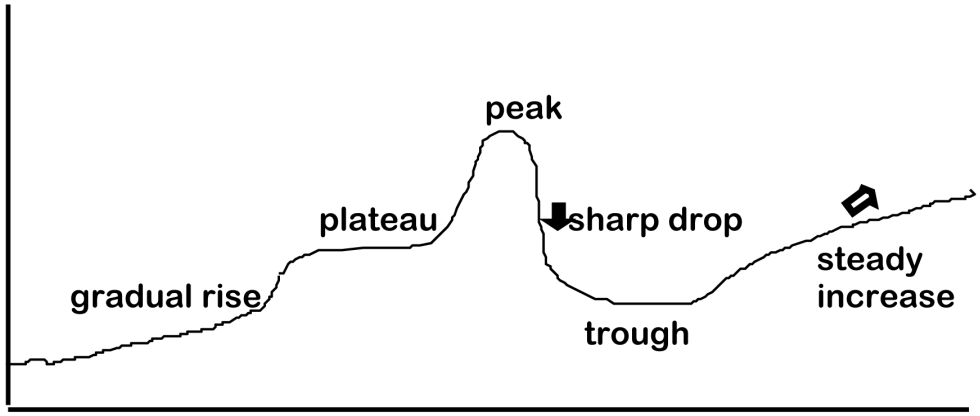


Figure 5. *Percentage utilisation*

6. Stanley Fore, Thabani Mudavanhu, (2011) «Application of RCM for a chipping and sawing mill», *Journal of Engineering, Design and Technology*, Vol. 9 Iss: 2, pp.204 – 226. DOI (Permanent URL): 10.1108/17260531111151078. http://www.emeraldinsight.com/journals.htm?issn=1726-0531&volume=9&issue=2&articleid=1939767&show=html#3430090206012.png



	minimal	rise
	slight	increase
	small	fluctuation
	slow	decrease
	steady	decline
There has been a(n) (very)	marked	reduction
	large	
	dramatic	fall
	steep	
	sharp	drop
	rapid	...
	sudden	

Bar graphs

Artisan overtime trend

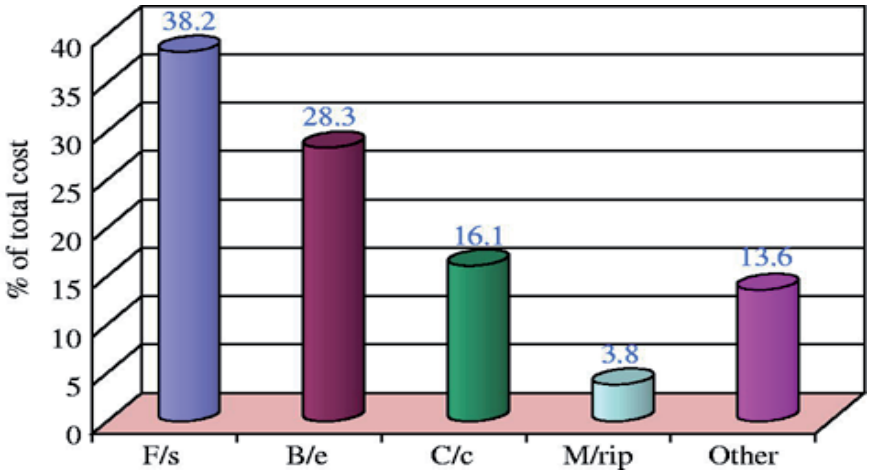
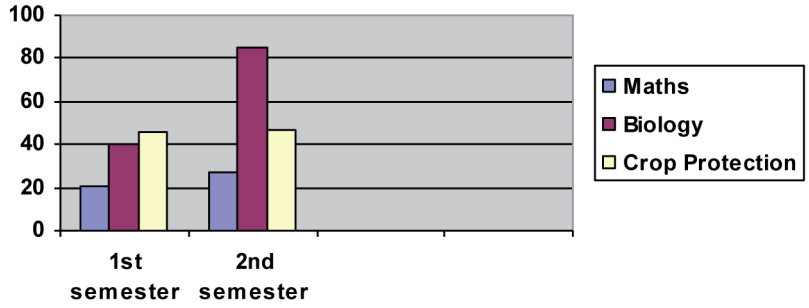
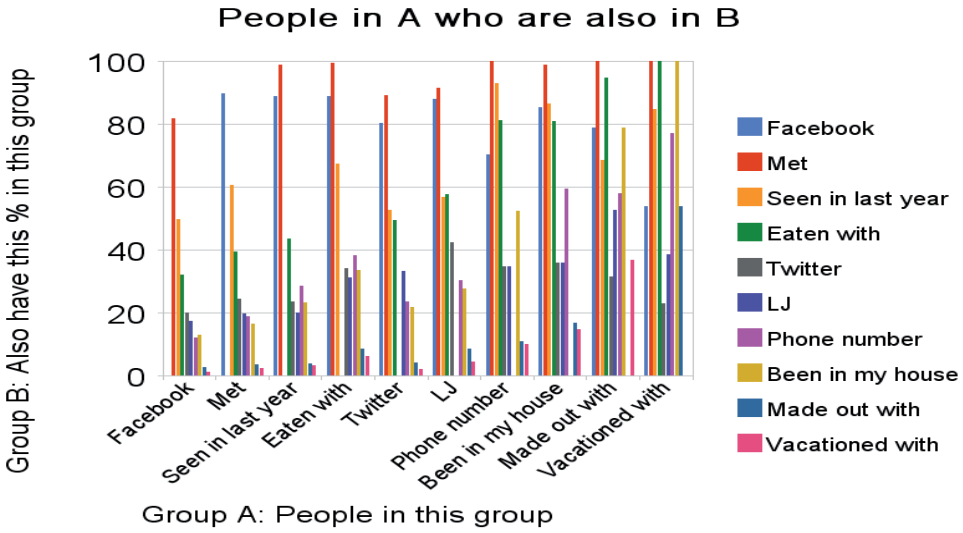


Figure 7. *Wet mill cost failure data*

Figure 7 represents the wet mill cost failure data, where maintenance costs are related to sections: frame-saws (F/s), board edgers (B/e), chip cutters(C/c), and mill rippers (M/rip) or other. It is also possible that bar graphs show more than one piece of information for each of the variables in the horizontal axis. In the bar graph below for example, we have included a hypothetical representation of a student's success in three different subjects in the first and second semester of an academic year:



And in the next one, ten different items are represented for all the people in group A in each contact group.



From Buster Benson http://www.flickr.com/photos/erikbenson/3264763149/sizes/o/in/photostream/, http://www.flickr.com/photos/erikbenson/3264763149/

Diagrams/Drawings

They are used to present a very specific kind of information where numbers are not the main aim. Tools and devices, models or the way a system works would be the typical examples. Figure 8 in the sample below shows the functional block diagram for a chipping and sawing system. Unlike photographs they may provide a very detailed illustration of the parts or components which are then easily labelled.

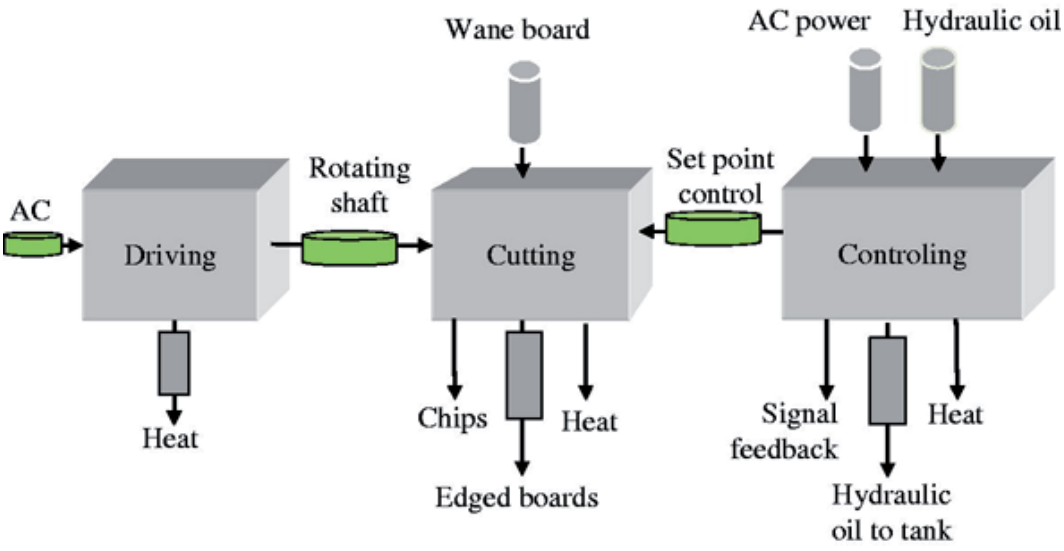
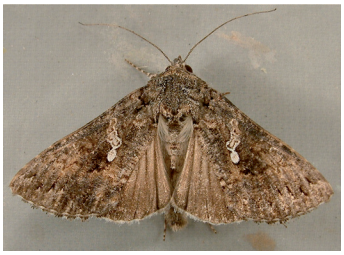


Figure 8. *Functional block diagrams*

Stanley Fore, Thabani Mudavanhu, (2011) «Application of RCM for a chipping and sawing mill», *Journal of Engineering, Design and Technology*, Vol. 9 Iss: 2, pp.204-226. DOI (Permanent URL): 10.1108/17260531111151078. http://www.emeraldinsight.com/journals.htm?issn=1726-0531&volume=9&issue=2&articleid=1939767&show=html#3430090206012.png

Photographs

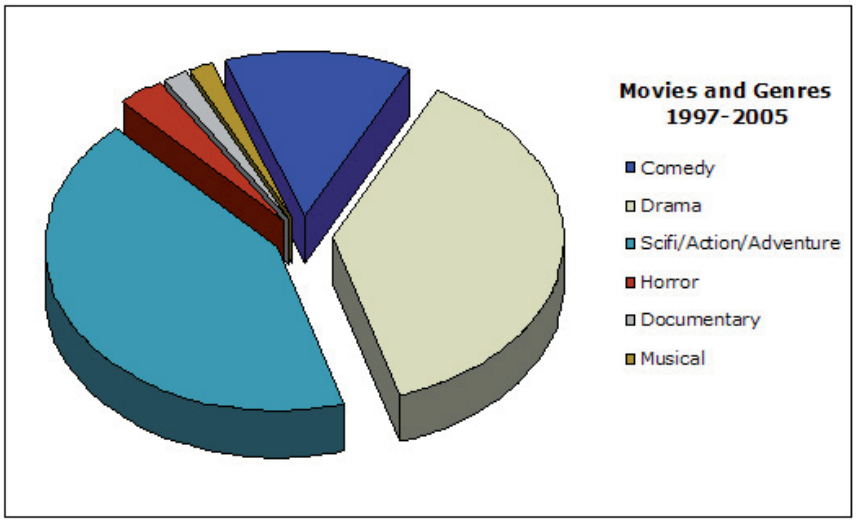
They are similar in purpose to drawings and diagrams but are real images. These are helpful for instance in Biology and Life Sciences texts where detailed photographs of full plants and animals, parts of them or cells are shown clearly where a mere drawing would not give us a clear idea to recognise a specimen or for example the damage caused by a pest in a plant. Consider for instance an image like this:



(Photo by willapalens on Flickr. http://www.fotopedia.com/items/flickr-2538046917)

Pie charts

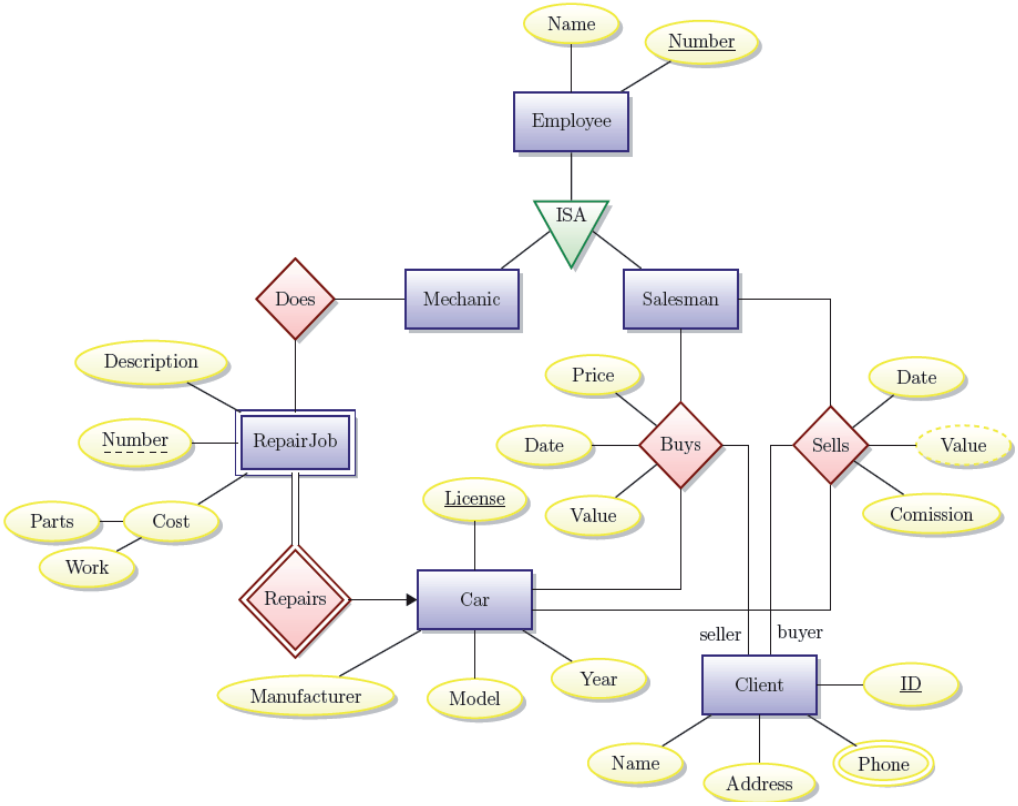
When we are working with the protions or shares that different parts or participants have out of a 100%, pie charts are useful. They are a circle that is divided into parts that represent exact percentages. The pie chart below represents the percentages of the different movie genres between 1997 and 2005. How would you explain the data presented here?



(From: Rude Cactus: Cinematic Dorkdom, http://www.rudecactus.com/archives/001953.html)

Flowchart

Finally, flowcharts are graphical representations of a process. In a flowchart each part of the process is characterized by a different symbol, and the parts are joined by arrows that indicate their relationship in the process that is being exemplified.



(From: http://www.texample.net/media/tikz/examples/PDF/entity-relationship-diagram.pdf; Published 2009-08-06 | Author: Pável Calado)

Once data have been presented and generally discussed, it is a good idea to summarise data significance and provide some concluding remarks regarding its interpretation. To this aim, summarising transition phrases may be used. Some examples follow.

SUMMARISING AND CONCLUDING

* In short / Summarising / In a word / In brief / To sum up

* In conclusion / On the whole / Altogether / In all

* Finally we can say / it can/may be said that ...

RELATING THE DISCUSSION WITH THE CONCLUSION

Therefore,	it can be	concluded	that ...
Thus,		deduced	
On this basis,		inferred	
		shown	
		estimated	

* when the results are not too obvious, or not yet fully proved ... be cautious:

- It seems that
- It could be said
- It would seem / appear that ...

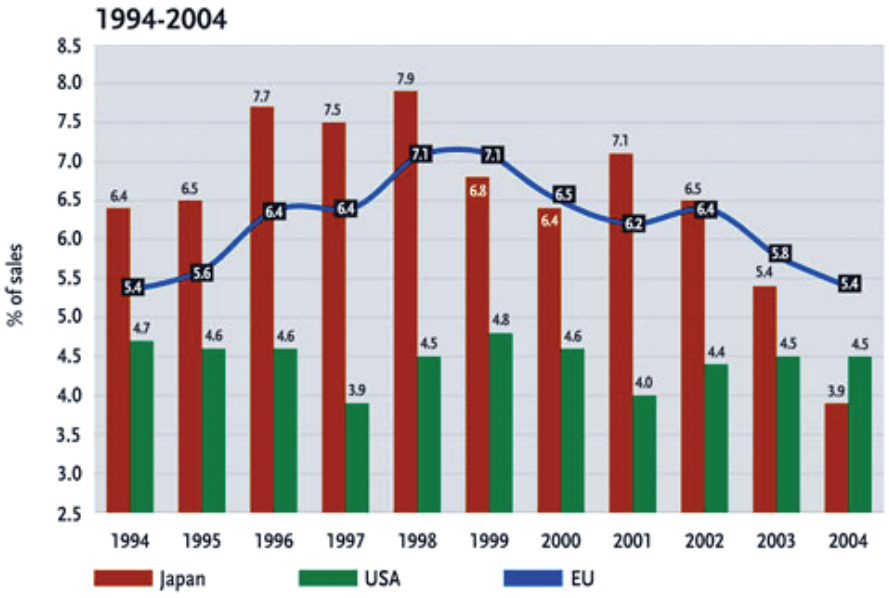
- It is possible / likely / unlikely
  almost certain / rather unlikely that...

The following graphics and their interpretation were taken from the *European Chemical Industry Council* http://www.cefic.org/Facts-and-Figures. They are good examples on how to analyse data and how to explain information given in graphics.

Reading the extracts and looking at the graphs is a good exercise to become familiar with data understanding and how to express possible interpretations in English. Once you have finished reading these examples, please go to http://www.cefic.org/ and try to find the reports for the last year. Choose one or two of the graphics you will find there and without looking at the accompanying text, try to interpret data using your own words. When you finish your writing, compare your results with the explanations provided by CELFIC. Note down all those phrases that you did not use and consider worthwhile learning to have a better output in your next graphic interpretation.

04 EU (25) Chemicals* Activity

While the European chemical industry experienced a recovery in 2004, there is a growing doubt that this positive trend will last in 2005. Basic inorganics, petrochemicals and plastics show a downward trend after having reached a high level in 2004. Most adversely affected by the slower business are fine and specialty chemicals with a growth rate of just 0.6% in 2005. In this sector, growth will be considerably lower than last year. By contrast, after a difficult year in 2004, the less cyclical pharmaceuticals production is back on the growth path. The situation is also improving for consumer chemicals. The chemical industry is hoping for better business development in Europe in 2006. For 2006 as a whole Cefic expects a production increase of 1.9% (excluding pharmaceuticals). Pharmaceutical production should continue to develop above the average so that chemical production including pharmaceuticals will grow by 2.3%.

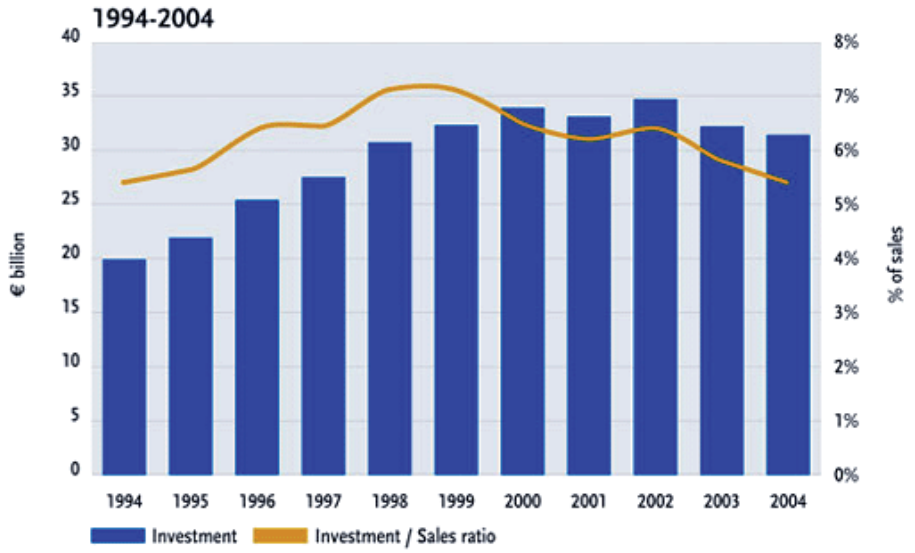


Source: Cefic

In % of sales	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
EU	5,4	5,6	6,4	6,4	7,1	7,1	6,5	6,2	6,4	5,8	5,4
USA	4,7	4,6	4,6	3,9	4,5	4,8	4,6	4,0	4,4	4,5	4,5
Japan	6,4	6,5	7,7	7,5	7,9	6,8	6,4	7,1	6,5	5,4	3,9

01 Chemical industry capital spending in the EU

download print

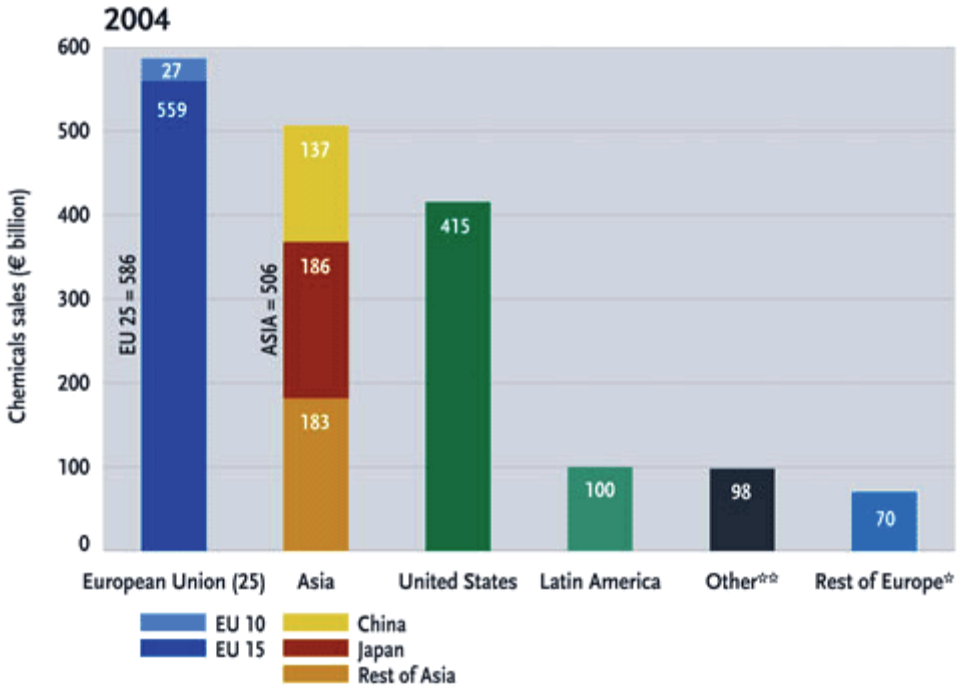


Source: Cefic

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
In % of sales	5,5	5,7	6,4	6,5	7,3	7,1	6,7	6,4	6,4	5,9	5,4
In bn euro	20,1	22,2	25,6	27,9	31,5	32,4	34,5	34,4	34,8	32,4	31,4

Investment and research & technical development (R&TD) are the key elements in securing the future of the chemical industry. They not only promote the adaptation to and the development of new technologies, but are necessary prerequisites for the continuous adjustment of corporate structures to the needs of the market-place. The investment sales ratio has been continuously decreasing since 1998. In absolute value, investment was 7% lower in 2003 than in 2002 and continues its decline by 2.5% in 2005.

01 Geographic breakdown of world chemicals sales



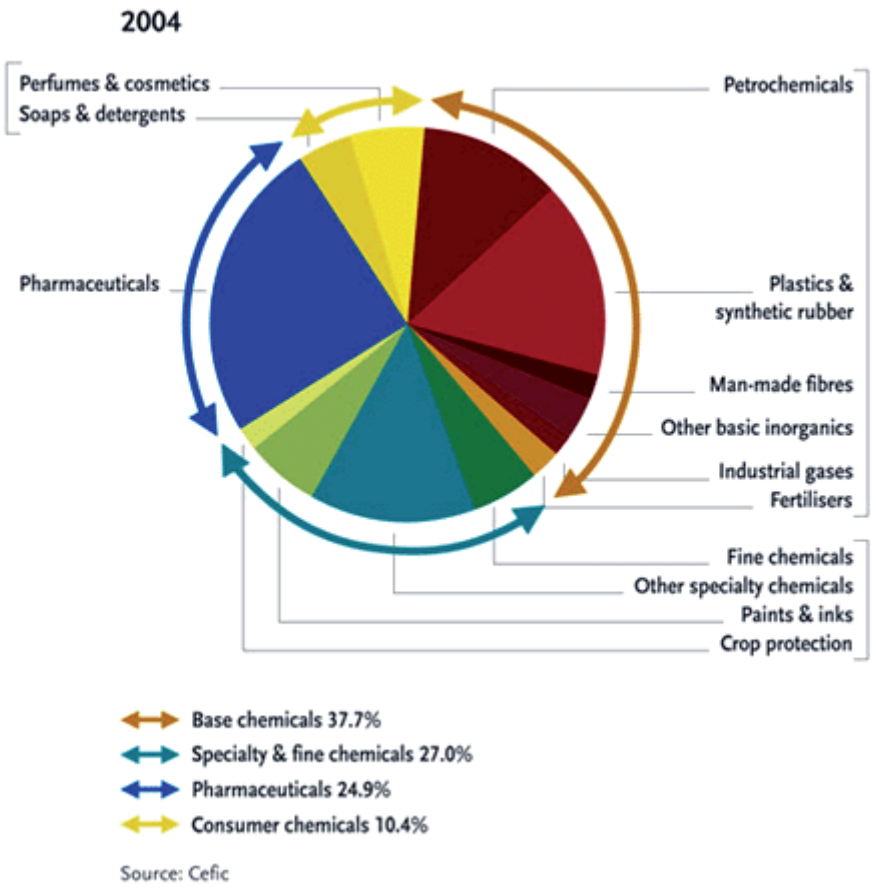
World chemicals sales in 2004 is estimated at € 1776 billion
The EU accounts for 33% of the total

Sources: ACC & Cefic
Definition: Rest of Europe*= Switzerland, Norway, and other Central & Eastern Europe (excluding the new EU 10 countries)
Other** including Canada, Mexico, Africa & Oceania

The chemical industry is one of the EU's most international, competitive and successful sectors, embracing a wide field of processing and manufacturing activities. In 2004, world chemicals sales were estimated at € 1776 billion. With € 586 billion, the EU 25 is the leading chemicals producing area in the world, followed by Asia and USA. The EU 15 represents more than 95% of the EU 25's chemicals turnover. Taken together, the EU 25, Asia and USA account for about 85% of the world turnover

04 Sectoral breakdown of EU chemical industry sales

download print

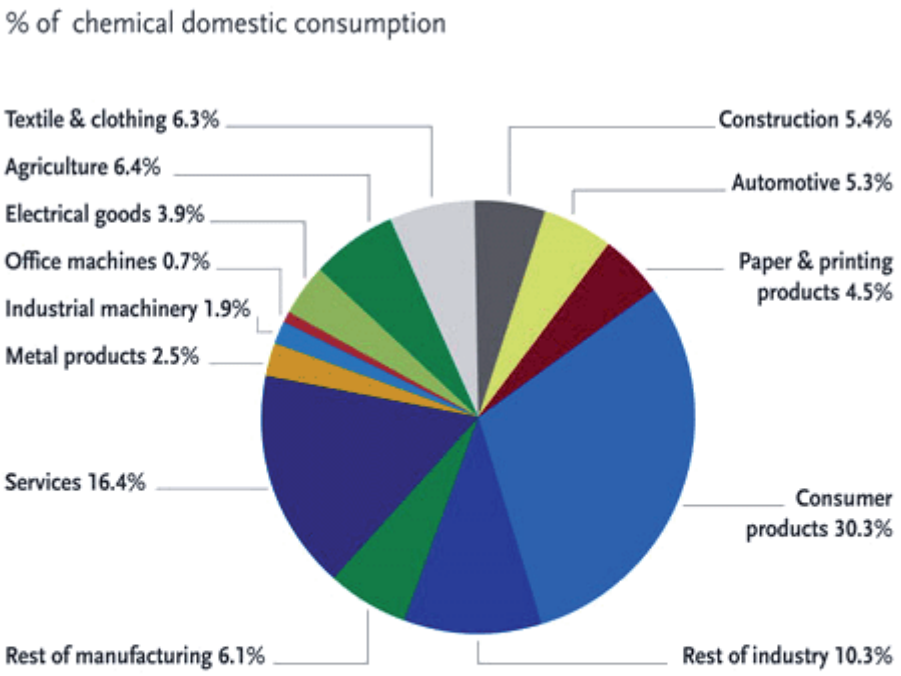


The output of the chemical industry covers four wide ranges of products: base chemicals, speciality and fine chemicals, pharmaceuticals, and consumer chemicals.

- Base chemicals covers petrochemicals and derivatives and basic inorganics. They are produced in large volumes, and are sold to the chemical industry itself or to other industries. They represent 37.7% of total EU chemicals sales.
- Specialties cover the auxiliaries for industry, dyes & pigments, oleochemicals, crop protection, and paints & inks. Fine chemicals represent pharma-, agro-, and chemical intermediates. They are produced in small volumes but represent 27% of total EU chemicals sales.
- Pharmaceuticals represent both basic pharmaceutical products and pharmaceutical preparations but not pharmaceuticals intermediates. They account for 24.9% of total EU chemicals sales.
- Finally, consumer chemicals are sold to final consumers: soaps and detergents, perfumes and cosmetics. They represent 10.4% of total EU chemicals sales

09 EU* chemical industry consumption structure

download print



Sources: Cefic & Eurostat
Notes: Percentage shares are calculated by taking into account the re-allocation of domestic consumption to downstream customers of chemicals self-consumption & consumption by the rubber & plastic processing industries
* EU 15

The chemical industry underpins virtually all sectors of the economy and its strategies impact directly on the downstream users of chemicals.

The reallocation of internal consumption by the chemical industry and consumption by the rubber and plastic processing industries produces the following picture of the consumption structure:

- 30.3% of chemicals are absorbed by consumer products, 16.4% go to services, 6.4% to agriculture, 5.4% to construction, 6.1% to the rest of manufacturing and 10.4% to the rest of industry.
- The big industrial customers of chemicals are the metals, mechanical & electrical industries, textiles & clothing, the automotive industry and paper & printing products

PROCESSING and PRESENTING INFORMATION: VISUAL AIDS

Draw a pie chart representing how good your class is at writing, speaking, listening and reading in English. Each student should state which her/his best skill is.

PROCESSING and PRESENTING INFORMATION: VISUAL AIDS

Things people like doing

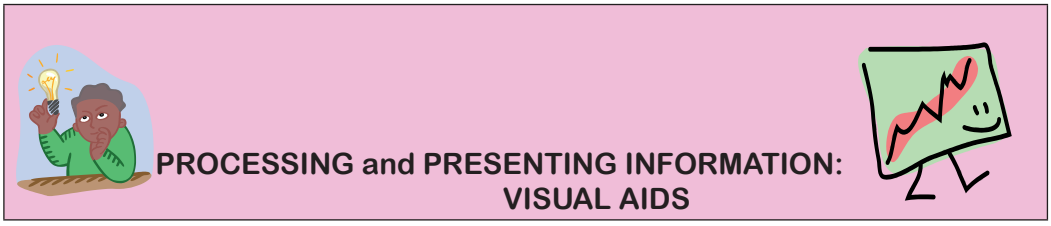
Gather information from your classmates as to which of these things they like doing most. They should number them from 1 to 10, 1 being the favourite and 10 the one you are lest interested in. you should gather information speaking in English. Then, working in small groups, design a graph to show the results.

- Get a high paying job
- Save money
- Save time
- Look better
- Learn something new
- Sleep well
- Be free of aches and pain
- Don't want to be lonely
- Want to be popular
- Get more pleasure

PROCESSING and PRESENTING INFORMATION: VISUAL AIDS

Draw a graph providing information about «Things people think I'll do because I like heavy metal / country music / rap / classical music» (chose one of the musical options only), considering the following options for your graph:

- Scare little children
- Be sarcastic
- Experience peer-pressure
- Be energetic and always dancing
- Wear dirty clothes
- Be aggressive
- Depend too much on my parents
- Be old-fashioned
- Be intelligent
- Be depressive or melancholic
- Be a normal teenager
- Be suicidal
- Be easy-going
- Listen to horrible music



What «something-users» like

In groups of 5 or 6 persons: first work on your own and do not make any comments to the members of your group. Each person in the group should make a list of the things they most frequently do with their cell phones. Then work together and design a graphic to present this information. Decide which kind of visual aid is the best to present this kind of data. The title of your graphic should be «Things people in our group do with their cell phones». Present the graphic to the rest of the class and interpret and explain the numbers.

Alternatives:

- Things people like to do online
- The things you are really good at
- The things you like doing during your weekends
- The things you do / have to do at university by order of frequency

PROCESSING and PRESENTING INFORMATION: VISUAL AIDS

For the the next group work that you are asked to carry out in any of the subjects you are studying, draw a flowchart indicating the beginning and end of the process, and the actions and decisions that you will have to take. Remember for each part of the process you will have to use a different symbol (circle, triangle, square, rectangular or elliptical).

SHORT TEXTS: SUMMARIES AND OUTLINES WATCH AND LISTEN

Listen to the video on «How to save gas» at 5min Knowledge and summarise the main points to your classmate. Alternatively you may also write them down:

http://www.5min.com/Video/How-to-Save-Gas-by-Checking-the-Tire-Pressure-57207824

SHORT TEXTS: SUMMARIES AND OUTLINES WATCH AND LISTEN

Listen to the video «How to Replace an AEG Washing Machine Door Lock»
http://www.5min.com/Video/How-to-Replace-an-AEG-Washing-Machine-Door-Lock-304121480

1) Pay attention to the first minute and try to note down the definition the speaker provides on what a door lock mechanism or a door interlock is

2) Can you provide a set of instructions to explain how to change a door lock mechanism?

SHORT TEXTS: SUMMARIES AND OUTLINES READING COMPREHENSION : write an outline

PROCEDURES AND CLASSIFICATION

Read this long text about plastics and try to write an outline using the information you have read.

Louis A. Bloomfield: howthingswork.virginia.edu

Is there any easy way to mold plastics?

> The easiest way to mold plastics is to form them directly inside a mold. Most plastics are made by attaching small molecules to one another in a process called polymerization. You begin with one or more small molecules or «monomers» and cause them to link together into in a «polymer.» You can initiate this polymerization with chemical catalysts, light, or even heat. There are many plastic-forming systems that you can buy commercially. You simply mix a few chemicals together, pour the mixture into a mold and wait. Once the polymerization has finished, you have a molded piece of plastic.
>
> If you don't want to do the polymerization yourself, you can start with a finished plastic and melt it. Most plastics that haven't been vulcanized into one giant molecule (as is done in rubber tires) will melt at high enough temperatures (although some burn or decompose before they melt). These molten plastics can be stretched, squeezed, or poured into molds to make just about any shape you like.

How dangerous are plastics for storing and reheating food? I remember hearing that plastic containers can release carcinogenic materials when reheating food in the microwave. I also heard that plastics can release «plasticizers» into food even when cold. What studies exist about these dangers? -- CVL, Fairfax, VA

> While I'm not up to date on actual studies, I would think that most food storage plastics introduce very little contamination into the foods stored in them. We have become so concerned as a society about toxic chemicals in recent years that we tend to overreact much of the time. While the actual polymer molecules in most plastics are relatively inert and harmless, plastics inevitably contain some small molecules, either by accident or by design, that work their way into food. Even if some of these molecules are toxic or carcinogenic, the quantities involved are almost certainly insignificant. Modern chemical testing can detect incredibly small quantities of various chemicals and we panic every time we find them in our environment. But the

societal cost of banning or avoiding all contact with or use of these chemicals may have hidden costs that are worse than the problem we're trying to solve. Moreover, I'll bet that many of the foods put in plastic containers are greater health hazards than the containers themselves.

How do Oven Cooking Bags work? I know they are made of heat resistant nylon resin, but can you explain what that means? -- HY, Halifax, Nova Scotia

There are two broad classes of plastics: (1) thermoplastics that can melt, at least in principle, and (2) thermosets that can't melt under any circumstances. Thermoplastics consist of very long but separable molecules and common thermoplastics include polyethylene (milk containers), polystyrene (Styrofoam cups), Nylon (hosiery), and cellulose (cotton and wood fiber). Thermosets consist of very long molecules that have been permanently cross-linked to one another to form one giant molecule. Common thermosets include cross-linked alpha-helix protein (hair) and vulcanized rubber (car tires).

Most common plastic items are made from thermoplastics because these meltable plastics can reshaped easily. But different thermoplastics melt at different temperatures, depending on how strongly their long molecules cling to one another. The plastic in an Oven Cooking Bag is almost certainly a thermoplastic form of Nylon, but one that melts at such a high temperature that it doesn't change shape in the oven. It's possible that the Nylon has been cross-linked to form a thermoset, so that it can't melt at all, but I wouldn't expect this to be the case.

How does Styrofoam work?

Styrofoam is a rigid foam consisting of gas trapped in the closed bubbles of polystyrene. Polystyrene itself is a clear plastic that's used in many disposable food containers. It's a stiff, amorphous solid at temperatures below 100° C, where amorphous means that it has none of the long-range order associated with crystalline solids. The long, chain-like polystyrene molecules are arranged like a tangled bowl of spaghetti noodles. Amorphous plastics tend to be clear because they're very homogeneous (uniform) internally and let light passes through them without being deflected or reflected. Plastics that are partially crystalline tend to be white. I think that items bearing the #5 recycling label are made of polystyrene.

But when air or another gas is injected into melted polystyrene and the mixture is beaten to a froth, it forms a stiff white solid when it cools. The whiteness comes about because of inhomogenieties--the gas spoils the uniformity of the plastic so that light is deflected and reflected as it passes through the material. The Styrofoam retains the rigidity of the polystyrene plastic below 100° C, so that it's suitable for beverage containers for liquids that are no hotter than boiling water. At one time, one of the gases used to make polystyrene foams was Freon, but I believe that Freon is no longer used for this purpose.

How is powder coating done?

Powder coating is done by combining the components of the coating (the binder a polymer having giant chain-like molecules, the pigments, and the additives) to form a uniform solid, which is then pulverized to a dry powder and sprayed onto the surface to be coated. This coating is then baked to form a continuous film. There are two main classes of powder coatings: thermosetting and thermoplastic coatings. In a thermosetting film, crosslinking occurs between the molecules in the powder during baking. This crosslinking turns the baked film into a single giant molecule that can't melt or flow. In a thermoplastic film, thermal energy makes the binder molecules mobile enough to become entangled so that a continuous film forms and this film hardens upon cooling. While a thermoplastic film can still melt or flow, it can do that only at elevated temperatures. The powders are often given electric charges during spraying so that electrostatic forces will hold them in place until they're baked on.

Why is it so expensive to recycle plastic?

Different plastics are handled differently for recycling. Thermosets, such as rubber in tires, cannot be melted and cannot be recycled. Only thermoplastics can be melted for true reuse. There are 6 common thermoplastics that are recycled. These are numbered 1 through 6 on their bottoms. Objects made from one of these plastics can be collected together, melted, and then reformed into new useful objects. Unfortunately, the melted and reformed plastic isn't as pure as the original. The plastics manufacturers would rather clean up petroleum into petrochemicals and then make pure plastics than start with plastic objects, clean them, and reuse them. Because the recycler can't control what was in the plastic objects, these objects cannot be used for critical applications such as food containers or plumbing. Thus most recycled plastic is used for less profitable applications. If the recycler could be absolutely sure that the plastic hadn't been contaminated, some of it could be reused very easily. Plastic milk jugs could be reformed into plastic milk jugs over and over again.

Why do some glues dry faster than others?

Some glues literally «dry», since they contain a plasticizer chemical that evaporates to leave a firmer plastic. Other glues polymerize directly during the gluing process. For the glues that dry by evaporating plasticizer, the choice of plasticizer is critical. Water leaves relatively slowly compared to volatile organic solvents such as toluene or acetone. That is why water-based white glue dries more slowly than organic-based plastic cement. But the glues that polymerize during the gluing process (they «cure» rather than «dry») have a broad range of speeds. Some of those glues polymerize very rapidly (e.g. superglues and 3-minute epoxies) and some go much slower (normal epoxies). In general, slower glues produce stronger materials because they contain long polymer molecules. The fast curing glues form too many short polymer molecules and are not as tough.

(From: http://www.lmpc.edu.au/science/research_projects/text_types/0_text_types.html)

This text includes some evaluative language. Try to write a short text regarding the use of paper in a fictional enterprise and give it a negative evaluation providing a graphic illustrating the company's loses. You can use a thesaurus in order to find antonyms for the evaluative words used in the text below.

Bank of China Branch Cuts Paper 95%

Bank of China's London operations have reduced paper consumption by 95 percent with help from IBM, the companies have announced.

IBM Business Partner Centric iSolutions is helping the Bank's London subsidiary to automate the processing of its interbank messages.

The bank had been manually printing about 3,000 interbank messages a day, and distributing these to various internal departments. This method had high labor costs, used 50 pounds of paper a day and presented an avoidable operational risk, IBM said.

IBM instituted an electronic routing and monitoring system, eliminating the need to print out hard copies, and saving £12,000 a year on paper costs alone.

All employees in the loan, trading services, banking, clearing and IT departments have access to an online transactions application, as needed depending on their role. The system is powered by IBM Informix software. It has a powerful search engine that allows the bank to ensure transactions are processed in the proper time frame, IBM said.

«The improved access to information has been key in helping us meet compliance regulations and reduce costs. The availability of information across all our departments has led to further benefits such as reducing our paper consumption by 95 percent and allowed us to make more timely and accurate decisions,» said Stephen Hinds, COO of Bank of China's London branch and subsidiary.

A recent survey found that IBM stood out, along with Deloitte and Logica, as the **most capable** companies in sustainable technology services.

Recently IBM has been highly ranked in a number of sustainability rankings. It was number three in Newsweek's **environmental rankings** of the 500 largest U.S. companies. As of November 17 it was a top holding in the **Dow Jones** Sustainability World (DJSIWorld) Enlarged Index.

IBM came in only seventh on Greenpeace's **Cool IT leaderboard**, but the survey ranked IBM number one in the category of company efforts to reduce their own emissions.

http://www.environmentalleader.com/2011/01/26/bank-of-china-branch-cuts-paper-95/

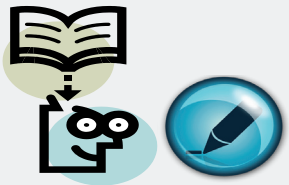
WATCH AND LISTEN

Listen to the video and try to note down all the keywords that you find relevant for this topic. Use a dictionary to find out about their precise meaning and their grammar.

Coal Combustion and Acid Rain
http://www.5min.com/Video/Coal-Combustion-and-Acid-Rain-1354362

Now, try to answer the following questions:

1. What happens when coal burns?
2. What are scrubbers?
3. What changes the nature of clouds?
4. Name one way to address the problem of acid rain
5. Can you provide a definition for acid rain? Explain the PROCESS of how acid rain is caused.



ORGANISING YOUR IDEAS: WRITING

The Princeton Review defines a machinist as follows:

> «Machinists use metalworking equipment, such as lathes, shapers, grinders and saws, to form either unique and carefully shaped individual pieces, or multiple pieces of specifically tailored metal. Machinists work for large concerns that use metal in their final products, such as heating-vent manufacturers or automobile factories, or they work for specialty shops that take specific orders for needed parts and equipment. Machinists must be able to read blueprints and be familiar with laser and optical measuring devices that can test the degree of precision of their work. Some specifications call for shaping a piece of metal to within one-one-thousandth-of-an-inch accuracy.»

©2011 The Princeton Review, INC. http://www.princetonreview.com/Careers.aspx?page=1&cid=89&uidbadge=%252507

Below, you will find some indications on the basic tasks, skills and knowledge that a machinist should have. Read the information and then write a text of about 100 words summarising what you think are some of the most important tasks, skills and knowledge in this profession.

Machinists

Tasks

- Calculate dimensions and tolerances using knowledge of mathematics and instruments.
- Align and secure holding fixtures, cutting tools, attachments, accessories, or materials onto machines.
- Select the appropriate tools, machines, and materials to be used in preparation of machinery work.

Skills

Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.

Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

Operation and Control — Controlling operations of equipment or systems.

Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.

Monitoring — Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.

Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.

Complex Problem Solving — Identifying complex problems and reviewing related information to develop and evaluate options and implement solutions.

Equipment Maintenance — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.

Knowledge
Mechanical — Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
Production and Processing — Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximising the effective manufacture and distribution of goods.
Mathematics — Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.
Design — Knowledge of design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models.

Adapted from *O*net Online*. http://www.onetonline.org/link/summary/51-4041.00

Key

Unit 1

How to Turn a WAG (Wild-Ass-Guess) Into a SWAG (Scientific-Wild-Ass-Guess)

Bob.Zimmerman | April 8, 2011 | no comments
Tweet

Next in our *Providing Meaningful Estimates* series we talk about turning WAGs into SWAGs.

S-W-A-G stands for a Scientific Wild Ass Guess. It's sometimes used more as a tongue-in-cheek way of saying: «This estimate isn't really reliable. I pulled it out of the air».

I'm going to show you how to put the S — the science — back in a WAG so even an off-the-cuff estimate can be meaningful and useful to your audience. The easiest way for me to demonstrate how to improve your SWAGs is to use a simple example.

Consider providing a SWAG, an order of magnitude estimate, on how long it would take you to read to The Fountainhead (752 pages) by Ann Rynd. In fact, stop reading this article right now and come up with your estimate. Please don't do any research. Just take a moment and give me your «best» wild-ass-guess (WAG) right now. I'll pause for a sec.

No seriously, take a moment, and come up with how many days it would take you? 1, 7, 14,..... 365? Just take a moment.

Now, I'm going to l give you a technique that will add some S to your WAG and make it a more scientific answer.

Actually, It's All In the «Words» We Use When We Present to Provide Our Estimates.

Whenever someone asks you for high-level-estimate and you can't really do proper research, you will need to make assumptions. The key is to expose these assumptions with your estimate and to demonstrate how changes in assumptions might impact your estimate.

Here's a framework that demonstrates how this works:

- When providing an estimate, always provide a range. And for each number in the range, provide assumptions. It sounds simple, but the difference is

pretty significant. Always start out by thinking: What is the lowest reasonable number your estimate might be. More importantly, explain provide why do you think it is unreasonable to assume that the estimate might be lower. So for The Fountainhead, you might start the estimate with: *«I can't imagine it taking me less than 7 or 8 days. Assuming I find the book interesting, I can probably read 100 pages a day and a little more on the weekend. But with my workload at work, and errands in the evening, it's not realistic to expect me to read more than 100 pages or so each day during the week.»*

- Next, think about what is realistically the longest this task should take you. When you give this estimate, you also share what assumptions need to be true for you stay within this estimate (not exceed your high number).Returning to our example with The Fountainhead, you might continue your estimate with: *«I can't imagine it taking me more than 40 days. If it does take longer, then the book must have been written in a 3-point font or in French (I don't speak French) or a crisis at work came up. I have to believe that I could force myself to read 20 pages a day, and even if I find it boring, I'll get through the book in 35 to 40 days.»*

Wild Ass Guess Vs. Scientific Wild Ass Guess

Now, let's contrast these approaches in terms of reading The Fountainhead- a. All 752 pages.

WAG: It might take me anywhere from 7 days (a week) to 30 days (a month).

Using our new framework, you would answer:

SWAG: «I can't imagine it will take me less than 7 days, assuming life doesn't throw me any unexpected curveballs and I can read 100 pages a day. I can see it taking me as long as 38 or 40 days if I can only get through 20 pages a day due to boring content or unexpected crises at work. If it takes me longer than 40 days, then it not only was painfully boring, it probably is written in some ridiculous font or written in French (I don't know French).»
(...)

In summary: The Framework

So, in order to turn your WAG into a SWAG, start your estimate with:

- The shortest or lowest estimate that is reasonable
- Why it isn't reasonable to be shorter/lower
- Explain how large it is possible to go
- What are the assumptions that would make it go that large
- What are your assumptions that could cause it to larger
- Finish your estimate with a viable, in between reasonable «target» in between

that you believe is reasonable to start with. Explain how and when you will be able to validate assumptions and firm up your estimate.

Read more here: http://www.gettingpredictable.com/how-to-turn-a-wag-wild-ass-guess-into-a-swag-scientific-wild-ass-guess/

TASK: Combine the prefixes super-, extra-, ultra-, and over- with the following word bases to fill in the gaps in the sentences below:

large (2) production (1) fast (2) long (2) pricing (1) cold (2) high (2) sensitive (2) positive (1)

- Because they are run on your PC rather than across the Internet they do not require a powerful computer and _____ connection. (*super-fast*)
- There will be new forms of military remote sensing equipment, and low cost instruments for analysing _____ chemical and biochemical reactions. (*ultra-fast*)
- Critique of what is claimed to be a new, _____ stereotype of ageing which denies its problems. (*over-positive*)
- Hotronic says the batteries were developed for _____ conditions. (*extra-cold*)
- Researchers at the University of Innsbruck have done just that with _____ lithium atoms, chilled to within 200 millionths of a degree of absolute zero. (*super-cold*)
- Using an _____ SPF sunscreen that -according to conventional reason- can stave off skin tumours. (*extra-high*)
- Terrestrial television transmission is _____ frequency (UHF). (*ultra high*)
- Kipnis and Tsang (1984b) analysed the S&P500 index for the period from April 1982 to January 1983 and, after allowing for transaction costs, found a considerable number of departures from the no-arbitrage condition, with both _____ and under_____ being present. (*over-pricing*)
- This will be captured on _____ photographic film. (*extra-sensitive*)
- NASA's _____ gamma-ray detector will ride on its Gamma-ray Large Area Space Telexcope. (*ultra-sensitive*)
- This was achieved by building an _____ cavern in Norway goes back to the early 1970s. (*extra-large*)
- They jumped in size from 200 000 to 300 000 and even 400 000 tonnes, earning the title ULCCs, for _____ crude carriers. (*ultra-large*)
- This helped the animal to be active and healthy despite being handicapped by _____ feathers. (*extra-long*)
- NASA's _____ Duration Balloon (ULDB) project. (*Ultra-Long*)
- Oestrogen has a negative feed-back effect on the pituitary gland thus checking _____ of FSH-RH. (*over- production*)

FULL TEXT VERSION: *Source: American Society For Technion - Israel Institute Of Technology* (http://www.technion.ac.il/) *Date: Posted 2/25/2002*

Plastic LEDs Break Telecommunications Barrier; Widespread Applications In Fiber Optics Possible

HAIFA, Israel and NEW YORK, N.Y., February 22, 2002 – In the past few years, polymers (plastics) that emit visible light have stirred excitement with the prospect of inexpensive, flexible products. But the huge optical telecommunications market seemed closed to these new light-emitting polymers because the plastics could not emit efficiently in the near-infrared (near IR) band where the optical fibers that carry the communications are most transparent.

In today's Science, Dr. Nir Tessler and his team at the Technion-Israel Institute of Technology in Haifa, together with Uri Banin and his team at Hebrew University in Jerusalem, announce a way to get polymers to emit near-IR radiation by incorporating tiny nanocrystals in the polymers. Once commercialized, such nanocrystal polymers could potentially cut the costs of the hundreds of millions of telecommunications terminals needed to bring fiber optic communications to individual homes, opening the family doors to global networks.

Polymer light-emitting diodes (LEDS) are much cheaper to make than conventional solid state LEDS and lasers. In the conventional devices, materials are laid down in a vacuum and exposed to light through a patterned mask. Then part of the layer is removed by acid in a complex, multi-step process. But because polymers are soluble in various solvents (organic solvents, water, acetone), polymer layers can be sprayed onto materials with ink-jet printers, forming devices as the solvent evaporates in a much simpler and cheaper method. Visible light-emitting polymers already are being incorporated into products ranging from flat panel displays to infant mobiles.

Optical telecommunications, however, require near-IR radiation, for in this bandwidth optical fibers are almost entirely transparent.

«Researchers thought that polymers could not efficiently produce near-IR radiation,» explains Dr. Tessler, who was among the pioneers at Cambridge University in England who found that polymers could be used to emit laser light. «The problem is that the softness and flexibility (attractive features) of polymers are associated with vibrations (motion of atoms) on the molecular scale. These vibrations bled off most of the energy of the radiation.»

The result: polymers or polymer-erbium composites produce near-IR radiation at a very low efficiency – around 0.01 per cent – far below that needed for economical operation.

Dr. Tessler's solution to this problem is to incorporate nanocrystals of solid semiconductors into the polymer.

«The polymer is used to create the necessary device structures and the nanocrystals act as near-IR emission centers. On top of that,» Dr. Tessler says, «the polymer conducts the electricity to the nanocrystals, where the near-IR radiation is emitted.» The nanocrystals are designed to have a shell of zinc selenium which isolates a core of indium arsenide from the vibrations of the polymer, acting as a nano-scale shield (bumper). In this way, when the nanocrystals are made to emit near-IR radiation, the energy is not linked to the polymer vibrations and hundreds of times more radiation is produced. The Israeli team has demonstrated an efficiency of two to three per cent at a wavelength of 1.3 microns, within the range of interest in fiber optic telecommunications. Since the nanocrystals are dissolved within the polymer, the polymer-plus-nanocrystal solution can be ink-jet printed just as other polymers can.

The Technion and Hebrew University research groups now are developing different nanocrystal-polymer combinations to increase efficiency another 10-fold to the range of 20-30%.

«We also expect to increase the wavelength to 1.5 microns, the best wavelength for telecommunications,» says Dr. Tessler, a senior lecturer at the Technion's Barbara and Norman Seiden/New York Metropolitan Region Center for Advanced Optoelectronics. While further work is needed to produce the actual lasers for high speed fiber links, this new technology could pave the way for high-speed optical fiber links to every home.

Listen: Biological and Chemical Warfare

During the gulf war, the threat of Iraqi chemical and biological weapons felt very real, because it was known that Iraq had done extensive research on these weapons. In the wake of the September 11 terrorist attacks, the threat feels very real again. A chemical or biological weapon used in a large city would kill thousands of people.

Understanding Warfare

There is an interesting paradox when it comes to war in the modern world. Anyone who has experienced war knows that it is about death and destruction on a massive scale. People die one at a time because of bullets, bayonets, hand grenades and landmines, and they die in large groups because of cannons, bombs and missiles. Buildings, factories or entire cities get destroyed.

Despite the appearance of anarchy, warfare between modern nations does have rules. These rules, for example, tend to discourage the wholesale destruction of **civilians**,

and they govern the treatment of **prisoners of war**. The rules are not always followed to the letter, and many times are broken completely, but they do exist.

Chemical weapons were first used in World War I, and the nations of the world quickly and uniformly decided that these weapons went too far. Apparently, killing people with flying metal and explosives was one thing, but launching a cloud of deadly chemicals -- the effects of which could neither be predicted nor controlled -- was another. Significant treaties prohibiting biological and chemical weapons, starting as early as the 1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, have been signed by most nations of the world.

The unfortunate problem is that terrorists, and rogue nations like Iraq, don't pay attention to significant international treaties. That is where the threat of chemical and biological weapons used in random attacks on innocent civilian populations comes from.

The Basics of Chemical and Biological Weapons

Like a nuclear bomb, a chemical or biological weapon is a **weapon of mass destruction**. An effective attack using a chemical or biological agent can easily kill thousands of people.

Chemical Weapons

A chemical weapon is any weapon that uses a manufactured chemical to kill people. The first chemical weapon used effectively in battle was **chlorine gas**, which burns and destroys lung tissue. Chlorine is not an exotic chemical. Most municipal water systems use it today to kill bacteria. It is easy to manufacture from common table salt. In World War I, the German army released tons of the gas to create a cloud that the wind carried toward the enemy.

Modern chemical weapons tend to focus on agents with much greater killing power, meaning that it takes a lot less of the chemical to kill the same number of people. Many of them use the sorts of chemicals found in insecticides. When you spray your lawn or garden with a chemical to control aphids, you are, in essence, waging a chemical war on aphids.

Many of us tend to imagine a chemical weapon as a bomb or missile that releases highly toxic chemicals over a city (for example, the movie The Rock featured a scenario in which terrorists tried to launch a missile loaded with the chemical **VX**, a nerve toxin). But in 1995, the group **Aum Shinrikyo** released sarin gas, a neurotoxin, in the Tokyo subway. Thousands were wounded and 12 people were killed. No giant bombs or missiles were involved - the terrorists used small exploding cannisters to release the gas in the subway.

Biological Weapons

A biological weapon uses a **bacteria** or **virus**, or in some cases toxins that come directly from bacteria, to kill people. If you were to dump a load of manure or human waste into a town's well, that would be a simple form or biological warfare -- human and animal manure contain bacteria that are deadly in a variety of ways. In the 19th century, American Indians were infected with smallpox through donated blankets.
A modern biological weapon would use a strain of bacteria or a virus that would kill thousands of people. Tom Clancy has explored the idea of biological terrorism in two books: «Executive Orders» and «Rainbow Six». In both books, the source of infection is the Ebola virus. In these plot lines, the infection is spread through small aerosol cans (like those used by insecticide products to create «bug bombs») released at conventions, or through misting systems used to cool sports venues.

Understanding Warfare: SUMMARY

Warfare between modern nations does have rules (not always followed to the letter) which tend to discourage the wholesale destruction of civilians, and govern the treatment of prisoners of war. The effects of chemical weapons can neither be predicted nor controlled and this gave rise to the emergence of warfare treaties which have been signed by most nations of the world. However, not all nations respect these treaties.

There is a difference between a chemical and a biological weapon. The former is any weapon that uses a manufactured chemical to kill people. Modern chemical weapons tend to focus on agents with much greater killing power, meaning that it takes a lot less of the chemical to kill the same number of people. The latter uses a bacteria or virus, or in some cases toxins that come directly from bacteria, to kill people.

****

Key *a*) grammar: kill can be transitive or intransitive; it is often used passively, in which case the agent is marked by **by** and the instrument by **with**

Key *b*) the subject of kill can be a human agent, but can also be an illness, an event (natural), a dangerous drug, a type of behaviour. The object can be human, animal or vegetable.
****

Could you put forth a definition for the following words?

cybercar	*road vehicles with fully automated driving capabilities*
cybertrend	*something currently popular in computers or online services*
cyberbabe	*cyberheroine, or cyberbelle, a sexy woman in a computer-animated game.*

cyberego	*excessive self-esteem based on one's status on the computer industry.*
cyberprofile	*sociological information about a group of Internet users*
cyberbullying	*electronic/online bullying*
cybercash	*money available online (also, digital money/cash)*
cyberhermit	*person spending most of his time on the Internet*
cyberad	*advertisment on the WWW*

****

Engine
Mechanical appliance used for converting any of various forms of energy into mechanical force and motion; a mechanism serves as an energy source. Engines can be operated, pushed, run, pulled, controlled.

Bicycle
A vehicle with two wheels, handlebars, seat and pedals.

Thermometer
An instrument used to determine or measure temperature. Old thermometers are made of glass and contain mercury inside which may rise or fall according to temperature. Nowadays thermometers are digital devices.

Mill
A building where we can find machinery for grinding grain into flour

Watermill
A mill in which the machinery is moved by water

Leak
A hole or crack that should not be there and through which a liquid or gas may penetrate or escape

Deforestation
To cut down trees and take them away from a forested area. Deforestation implies overcutting of trees

Drier
A device that is used for drying something by using heat or air

Hair Drier
An electric appliance used for drying your hair

****

Aim) Definitions: What should be expected from dictionary definitions? Students compare their own definitions with dictionary entries

Definition examples (you may note down definitions from dictionaries here. Try to select definitions that are easy to understand depending on your students' level or that you find will help you explain or introduce language explanations easily)

Card: a piece of paper that is stiff and thicker than paper
Postcard: a card for sending messages by post without using an envelope
***Chemistry*:**
***Liquid*:**
Tile:
Walk:
Walk in: enter a place by walking
Run:
Jump:
***Melting point*:**
***Freezing point*:**

TEACHER'S NOTES: Any other word that you like may be used for this exercise. Pay attention to phrases like «is/are used for», «characterised by» to express purpose; use of adverbs (quickly, fast) to express different kinds of movement in verbs, and «using ... / by * ING_VERB» to express procedure (how).

****

TIM'BER, n. [L. domus, a house; Gr. the body.]

1. That sort of wood which is proper for building or for tools, utensils, furniture, carriages, fences, ships and the like. We apply the word to standing trees which are suitable for the uses above mentioned, as a forest contains excellent timber; or to the beams, rafters, scantling, boards, planks, &c. hewed or sawed from such trees. Of all the species of trees useful as timber, in our climate, the white oak and the white pine hold the first place in importance.
2. The body or stem of a tree.

WOOD, n.

1. A large and thick collection of trees; a forest.
   Light thickens, and the crow makes wing to the rooky wood.
2. The substance of trees; the hard substance which composes the body of a tree and its branches, and which is covered by the bark.
3. Trees cut or sawed for the fire. Wood is yet the principal fuel in the United States.

(Dictionary entries taken from: Webster's 1828: http://www.christiantech.com/)

Unit 2

Are food-based plastics a good idea?

(...) **Food-based plastics**, made out of everything from corn to sugarcane, have rapidly grown in popularity over the past several years. Packaging materials, gift cards, cell phone casings -- all can be made from these eco-friendly materials. As the quality of food-based plastics improves, they will have broader and broader applications.

Proponents cite **two main advantages** of food-based plastics over their petroleum-based counterparts. **FIRST,** they're made from a renewable resource. **As long as** farmers grow the crops these plastics are made out of, production can continue indefinitely. **Second**, food-based plastics are widely considered to be easier on the environment. **For instance**, they require much less energy to produce than traditional plastics and release fewer greenhouse gases in the process. **Better yet**, they break down into harmless organic compounds -- in the right conditions.

Now for the drawbacks. **One of the most** glaring is their relatively low melting point. **While** popular plastics like **polyethylene terephthalate (PET)** may have melting points well beyond 400 degrees Fahrenheit (204 degrees Celsius), some plant-based plastics turn into puddles just from being left in a car on a sunny day. **For instance**, **polylactic acid (PLA)**, a corn-based plastic used by retail giant Wal-Mart among other companies, can have a melting point of just 114 degrees Fahrenheit (46 degrees Celsius). **As a result**, food-based plastics are simply unsuitable for a wide range of applications.

What's more, food-based plastics may not be as environmentally friendly as they appear. **While** they are biodegradable**,** most only break down under very specific conditions found in industrial composting plants. **That means** you can't simply throw them on the compost pile in your backyard and expect them to turn into soil, and if they do end up in a landfill, they break down just as slowly as conventional plastics. **While** food-based plastics can be recycled, they can't simply be mixed in with other recyclable plastics. **In fact**, the recycling industry considers food-based plastics a «contaminant» that takes time and money to process.

A final argument against food-based plastics is that generating them requires land and resources that could be going to producing actual food. Already, the U.S. Department of Agriculture (USDA) estimates that, by 2014, nearly a quarter of all grain production will go toward making ethanol and other biofuels; if food-based plastics take off, that number could climb even higher. Environmentalists also worry about the harmful effects of the pesticides and genetically modified crop strains used to create some of these plastics.

But don't give up on food-based plastics yet. **While** they still represent less than 1 percent of the plastics market, some very large companies have committed to

both improving and using the plastics moving forward. **For instance**, electronics manufacturers Panasonic and NEC have both announced the development of food-based plastics with significantly improved durability, heat resistance and ease of production compared to products currently on the market. Metabolix, another bioplastics manufacturer, has developed a plastic called Mirel that biodegrades in normal compost piles. Production costs for food-based plastics are rapidly dropping as well, which, coupled with their widening range of applications, will make them a much stronger alternative to conventional plastics moving forward. **Perhaps the strongest argument for food-based plastics,** however, is that after we've finally exhausted our supply of oil, they'll still be waiting for us.

Which is the typical sentence structure it appears in? What does it express, instantiation, additional information or contrast? How does the sentence structure help to that meaning? *While* expresses contrast and its sentences are divided into two parts each providing one side of the contrasted ideas

Read the following extract... then try to complete the second part of the text in a similar fashion:

Will the caffeine in chocolate make me jittery? Probably not. Cacao does contain a number of stimulants, such as caffeine and theobromine, but in small amounts that are diluted even further when processed into chocolate. In fact, one ounce of milk chocolate contains about the same amount of caffeine as one cup of *de*caffeinated coffee. Interestingly, one study has shown that the smell of chocolate may actually relax you by increasing theta waves in the brain.

Can chocolate cause headaches? There is little evidence of this, although some studies suggest that chocolate may trigger headaches specifically in migraine sufferers.

Is chocolate an aphrodisiac? Not really. Chocolate contains small amounts of a chemical called phenylethylamine (PEA) that is a mild mood elevator. It's the same chemical that our brain produces when we feel happy or «in love.» The mild «rush» we get from this substance may be why some people say they're «addicted» to chocolate.

Will chocolate raise my cholesterol levels? Contrary to popular misconception, eating lots of chocolate does not raise blood cholesterol levels. Chocolate contains stearic acid, which is a neutral fat that does not raise bad cholesterol (LDL). Also, the cocoa butter in chocolate contains oleic acid, a mono-unsaturated fat. This is the same type of fat found in olive oil that may actually raise good cholesterol (HDL).

Will eating chocolate make me fat? It can—if you eat enough of it. Chocolate, especially milk chocolate, is high in calories. In fact, it was once prescribed to help fatten up patients suffering from wasting diseases like tuberculosis. However, some people claim that drinking a cup of hot chocolate before a meal actually diminishes their appetite. One researcher even experimented with helping patients lose weight by having them sniff a chocolate-scented patch whenever they were tempted to snack!

Does chocolate contain any nutrients? Yes, it does, in small amounts. A 1.5-ounce milk chocolate bar contains recommended daily values of the following vitamins and minerals: 3 grams of protein; 15% of the Daily Value of riboflavin; 9% of the Daily Value for calcium; 7% of the Daily Value for iron. And if you add nuts like almonds or peanuts into the mix, you increase all of the amounts of nutrients listed above.

Will I live longer if I eat chocolate? Perhaps. A Harvard University study found that men who ate chocolate lived one year longer than those who didn't. Scientists think that chocolate contains chemicals that help keep blood vessels elastic and increase beneficial antioxidants in the bloodstream, but research is underway and no conclusive results have been found.

Many people eat chocolate when they are sad or feeling down. Others crave the stuff, claiming they are addicted to chocolate's unique taste and smell. Some even assert that chocolate can relax you, help you lose weight, and even prolong your life.

Scientists have conducted a number of studies on chocolate in recent years in order to sort through these claims. What they have discovered will not only surprise you, but may forever change the way you think about, buy, and eat chocolate.

Is Chocolate Addictive? Millions of chocolate lovers insist that the sweet not only lifts their spirits when they are sad or upset, but also hooks them like a drug. Is there any hard evidence to support their claims? Not really.

Chocolate can't give you a strong, physical «rush». Chocolate contains more than 300 chemicals, including stimulants such as caffeine and theobromine. But these stimulants aren't present in large enough quantities to significantly affect the brain and nervous system.

Chocolate isn't chemically habit-forming. In addition to these two stimulants, chocolate contains cannabinoids, chemicals that have the same affect **on** the brain as marijuana. To get «high,» however, you would have to eat more than 25 pounds **of** chocolate **in** one sitting. And these chemicals cannot make you physically addicted **to** chocolate.

Chocolate *can* elevate your mood. Despite the **above** facts, self-professed chocolate addicts aren't delusional. Some researchers believe their obsession is more likely the result **of** learned behaviors and cultural factors rather than chemicals. As for chocolate's mood-altering properties—carbohydrates present **in** the sweet can raise serotonin levels **in** the brain and lead **to** a feeling **of** well-being.

USE *CAN, COULD, MAY, MUST, NEED(S), SHOULD* TO FILL IN THE FOLLOWING GAPS:

1. In the later example it can be seen that, in comparison with metal, which undergoes gradual deformation when force is applied, ceramics suddenly break ...
2. ... ease in sintering temperature (Table 2) may be due to the above-mentioned reason ...
3. ... show a plastic fluid behaviour for which only apparent viscosity can be determined.
4. After the acquired data have been collected, they can be used to obtain the characteristic parameters of the test samples.
5. Researchers in the field of machine tools must bear in mind and take into account that the ...
6. Several requirements must be met to achieve high thermal ....
7. The particles which can be seen in the top right corner (magnified in figures 10 and 11) show ...
8. The translucency of porcelain bodies can be evaluated by absorption and scatter coefficients obtained from ...
9. an increase in sintering temperature may be due to the presence of a solid-solution
10. for the test performance the sample must have certain controlled dimensions...
11. The system accuracy must be better than 1/256 of the maximum ...
12. parameters greatly. All details must be well considered before transferring ...
13. Only small quantities need to be added to produce better de...
14. The quantity of organics needs to be controlled; i.e., high organic ...
15. polyacrilate should be studied carefully before it is used ...
16. Should casting rate be measured, or should permeability be calculated to determine ...
17. all the parameters mentioned above should be taken into account.
18. the sum of reflectance and transmittance must be lower than 100%.
19. Particular attention should be given to the dependence of electro-
20. after grinding, the following conclusions can be drawn: The granulation of the abrasive is directly correlated with...
21. It was believed that only specially qualified and experienced people could produce sanitaryware. However, this is no longer the case and now engineering has well proved that ordinary people without any specific skills can do this job because the casting process is completely automatic.

RESULTS THAT...
Fail to satisfy expectations are disappointing
Give confidence or reassurance are encouraging
Are reliable and steady are consistent
Are extremely harmful catastrophic
Bad and causing disaster disastrous

Irregular, illogical inconsistent
Suitable for comparison comparable
Are in one's favour favourable
Extremely good, impressive spectacular
Less than zero negative
Good, more than zero positive
Satisfactory, tolerable acceptable
Could not be avoided inevitable

Terms indicating an argumentative essay: GO ONLINE

Use the Merriam Webster dictionary, the Cambridge dictionaries online or the Macmillan online in order to understand the differences between these verbs.

http://www.macmillandictionary.com/ (with collocation box)

HINT: you may want to highlight those words in the definition that are essential to distinguish one verb from another

Analyse	Show the essence of something, by breaking it down into its component parts and examining each part in detail
Argue	Present the case for and/or against a particular proposition
Criticise	Give your judgment about the merit of theories or opinions about the truth of facts, and back your judgment by a discussion of the evidence
Critique	See 'Criticise'
Discuss	Investigate or examine by argument, sift and debate, giving reasons for and against
Evaluate	Make an appraisal of the worth of something, in the light of its apparent truth or utility; include your personal opinion
Interpret	Bring out the meaning of, and make clear and explicit; usually also giving your own judgment
Justify	Show adequate grounds for decisions or conclusions
Prove	Demonstrate truth or falsity by presenting evidence
Review	Make a survey of, examining the subject critically

Unit 3

1. flowers which have not been protected
   unprotected flowers
2. flowers that have a low quality
   low quality flowers
3. insects which visit the flowers
   flower-visiting insects
4. flowers that are rich in nectar
   nectar-rich flowers
5. flowers that have suffered serious damage
   seriously damaged flowers

Lemon *(C. Limonia)* - This is a small, widely branched tree that grows 10 to 20 feet high. It is thorny and evergreen and its leaves are narrow and ovate and light green. The flower buds are in pairs or single. They are tinted purple. The petals are white inside and purple on the outer surface. The fruit is usually pointed at both ends and light yellow. Its flesh is light and its juice sacks are thin. The seeds are ovoid and smooth. The Lemon is grown for its acid juice, which is used in flavoring and in making various drinks. Lemon peel is candied. Lemon trees are grown as pot plants and outside in regions fairly free of frost. It is commercially important in California; Spain and Italy mostly stock the European countries. The origin of the Lemon is unclear. Its native home may have been southern China and adjacent parts of Upper Burma, from which it spread into India and westward. It is recorded that by 1150 AD it was growing in Spain, where it was introduced by the Arabs. The Crusaders also had a part in its introduction into western Europe (1096-1271 AD); since then it has been grown there continuously. Columbus brought Lemon seeds and probably fruit with him on his second voyage (he reached Hispaniola on November 22, 1493). It was brought to Florida by the Spaniards, perhaps as early as 1565 and to California about 1769 when the Franciscan fathers started the establishment of the missions.

Lime *(C. aurantifolia)* - This evergreen tree is small, spiny and irregularly branched. Its small, elliptic to oblong leaves are pale green. The white flowers are small and produced in axillary clusters. The fruit is small, roundish and thin-skinned. The pulp is greenish and in sections of about ten. The juice is acid with a distinctive flavor. The Lime is a native of the East Indies and has spread all over the world in tropical and near tropical regions. It was brought to America by the Spaniards and became widely scattered throughout the West Indies. It was taken to Florida and in the southern parts has become naturalized. From Mexico, it was carried into California. While most Limes are acid, there also are sweet kinds grown and used in some of the areas where the acid ones are grown. Limes are gathered when fully grown, but still green, and shipped very soon after. The fruit is used in much the same way as Lemon.

Mandarin Orange (C. nobilis deliciosa) -
Its leaves are small and elliptic to lanceolate.

The oblate (often very flattened at the ends) fruits are orange to orange-red with a loose rind that comes off easily.

BANANA
The fruit (technically a berry) turns from deep green to yellow or red, and may range from 2-1/2 to 12 inches in length and 3/4 to 2 inches in width.

The flesh is ivory-white to yellow or salmon-yellow

MANGO
- The fruits are 2 to 9 inches long and may be kidney shaped, ovate or (rarely) round.

PINEAPPLE
The oval to cylindrical-shaped, compound fruit develops from many small fruits fused together.

It is both juicy and fleshy with the stem serving as the fibrous core and its flesh ranges from nearly white to yellow.

KIWI
The flavor is sweet/tart to acid, somewhat like that of the gooseberry with a suggestion of strawberry.

POMEGRANATE

The nearly round, 2-1/2 to 5 in. wide fruit is crowned at the base by the prominent calyx. The tough, leathery skin or rind is typically yellow overlaid with light or deep pink or rich red. The interior is separated by membranous walls and white, spongy, bitter tissue into compartments packed with sacs filled with sweetly acid, juicy, red, pink or whitish pulp or aril. In each sac there is one angular, soft or hard seed. High temperatures are essential during the fruiting period to get the best flavor. The pomegranate may begin to bear in 1 year after planting out, but 2-1/2 to 3 years is more common. Under suitable conditions the fruit should mature some 5 to 7 months after bloom.

From: Botany.com. the Encyclopedia of Plants, http://www.botany.com/

Two-spotted spider mite (*Tetranychus urticas Koch*)

This generally abundant species has a very wide host range and is an important pest of glasshouse crops. It also attacks hop, walnut and many fruit crops, including black currant, gooseberry, blackberry, raspberry and strawberry; sometimes a serious pest on garden fruit trees growing against walls, especially apricot, nectarine and peach. Less frequently, it occurs in apple, pear, cherry and plum orchards but not usually on sprayed trees. It occurs on various wild trees, shrubs and herbaceous plants but is more numerous on elm.

DESCRIPTION:

Adult female: 0.6 mm long; pale yellowish or greenish, with two dark patches on the body (the overwintering form is orange to brick-red); body oval with moderately long dorsal setae; striae on hysterosoma forming a diamond-shaped pattern. Adult male: similar to female but body smaller, narrower and more pointed. Egg: 0.13 mm across; globular and translucent, becoming pale reddish before hatching. Immature stages: pale greenish with darker markings; the larva is 6-legged.

Hop, Humulus lupulus L. (Urticales: Cannabaceae), is a perennial plant related to nettles and cannabis (hemp) that annually produces climbing stems from a perennial rootstock and crown. The bines (= vines) are produced in the spring and are densely covered with hooked hairs (trichomes) that help the bine climb. As the bine grows it winds around its support in a clockwise direction reaching length of 25 feet or more in a single growing season. (Taken from: Department of Plants, Soil and Entomological Sciences. University of Idaho. http://www.cals.uidaho.edu/pses/Research/r_ent_hoppest_plant.htm)

Unit 4

In this unit it is a good idea that abstracts belonging to the students' degree fields of study are chosen. The examples provided here belong to different disciplines, but since abstracts are not easy to read or at least not too motivating for the majority of undergraduate students, having them read and analyse texts with topics they are interested in would always be more motivating. It must be noted that finding an abstract that students may follow is usually a hard task since adequate language level and topic interest should be combined, and the abstract should also contain the language features that teachers are planning to discuss with their students.

The MICASE corpus (http://quod.lib.umich.edu/m/micase/) is a collection of transcripts of academic speech events and it is available online. Teachers can browse the corpus in order to design their own activities or to find more examples of a specific oral language feature that may be of interest for teachers or students. This can be complemented with youtube videos of academic lectures.

For the interview section of this unit, students may suggest jobs they are personally interested in and bring in job ads, they are very easy to find in the web and the task will be more relevant for them.

References

Antibiotics have been around for years, so why is it only recently that antibiotic-resistant bacteria have become the focus of attention and alarm? Also, why are resistant strains especially likely to arise if a patient doesn't complete a course of antibiotic therapy? It seems counterintuitive. Ask the expert. Health. In *Scientific American*. July 18, 1997. http://www.scientificamerican.com/article.cfm?id=antibiotics-have-been-aro

Are food-based plastics a good idea? http://science.howstuffworks.com/food-based-plastics.htm

Barna, I. F. and R. Kesner (2011) «Heat Conduction: A Telegraph-Type Model with Self-Similar behaviour of solutions II». *Advanced Studies in Theoretical Physics*, Vol. 5, 2011, no. 4, 193 – 205 http://www.m-hikari.com/astp/astp2011/astp1-4-2011/barnaASTP1-4-2011.pdf

Bentley, Neil «If we want economic growth, we must build more houses». *The Telegraph*. Comment. http://www.telegraph.co.uk/finance/comment/8557774/If-we-want-economic-growth-we-must-build-more-houses.html

Barnard Neal D. and Stephen R. Kaufman (1997) «Animal Research Is Wasteful And Misleading» *Scientific American*. February 1997: 64-66.

Biolog EcoPlates. http://biolog.com/microbialcommunityanalysis/?gclid=CPyBlJe28KwCFVQLfAodW30iMg

Clinton, Hillary Rodham «We must act now on food security». *The Hill's Congress Blog*. 05/06/11. http://thehill.com/blogs/congress-blog/foreign-policy/159643-we-must-act-now-on-food-security

Comber, N. M. (1922) «The availability of mineral plant food». *The Journal of Agricultural Science*, 12, pp 363-369 doi:10.1017/S0021859600005748; http://journals.cambridge.org/abstract_S0021859600005748

Computer Science 2010 *Computer Engineering Vs Computer Science* http://www.masshisto.org/computer-engineering-vs-computer-science.html

Damanaki, Maria (2011) «Where does fish come from?» SlowFish Opening Conference. European Commissioner for Maritime Affairs and Fisheries. European Union, 1995-2011. SPEECH/11/393. Date: 27/05/2011. http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/11/393&format=HTML&aged=0&language=EN&guiLanguage=en

Dickinson, A. G. (1960) «Some genetic implications of maternal effects—a hypothesis of mammalian growth». *The Journal of Agricultural Science*. 54 , pp 378-390 doi:10.1017/S0021859600021328; http://journals.cambridge.org/abstract_S0021859600021328

Ecobabble. Dictionary entry in Babylon online. Babilon.com http://online.babylon.com/combo/index.html?word=ecobabble&lang=3&type=3

Eco-Terrorist the New Boogeyman
http://www.youtube.com/watch?v=CuddEj5rfPI&feature=relmfu

Earth Day: 'Eco-Terrorists' Crackdown.
http://www.youtube.com/watch?v=upUTf5HMKLU

English 210 students of J Paul Johnson, Winona (MN) State University, 30 January 1997. *Annotated Bibliography: Language, Gender, and Writing*. Richardson, Laurel. «Gender Stereotyping in the English Language.» from *The Dynamics of Sex and Gender*. New York: Harper & Row, 1988. http://course1.winona.edu/pjohnson/gender/richard.htm/

Fashion & Textile Museum
http://www.artshole.co.uk/exhibitions/June%2005%2005/Fashion&TextileMuseum.htm

Google Home Income
http://www.internet-home-income.com/

Harris, T. *How Fingerprint Scanners Work*.
http://computer.howstuffworks.com/fingerprint-scanner1.htm/

K. HORNE et al. (2012) «Photothermal radiometry measurement of thermophysical property change of an ion-irradiated sample» *Materials Science and Engineering* B. 177 (2012) 164– 167 www.elsevier.com/locate/mseb

How to Turn a WAG (Wild-Ass-Guess) Into a SWAG (Scientific-Wild-Ass-Guess) (http://www.gettingpredictable.com/how-to-turn-a-wag-wild-ass-guess-into-a-swag-scientific-wild-ass-guess/)

Jong-Woei Whang, A.; Yi-Yung Chen, Shu-Hua Yang, Po-Hsuan Pan, Kao-Hsu Chou, Yu-Chi Lee, Zong-Yi Lee, Chi-An Chen, and Cheng-Nan Chen, (2010) «Natural light illumination system», *Appl. Opt.* 49, 6789-6801

Kumar, A. and R. Garg (2009) «Possible role of Trazodone and Imipramine in Sleep Deprivation-Induced Anxiety-Like Behaviour and Oxidative Damage in Mice» Methods and Findings in Experimental and Clinical Pharmacology Vol. 31, No. 6, 2009, pp. 383-387 DOI: 10.1358/mf.2009.31.6.1386992.
http://journals.prous.com/journals/servlet/xmlxsl/pk_journals.xml_article_pr?p_JournalId=6&p_RefId=1386992&p_IsPs=N&p_ispdf=N

Profiling Eco-Terrorists... Incorrectly. http://www.planetizen.com/node/18016

Shripad P Mahulikar et al (2009) «Study of sunshine, skyshine, and earthshine for aircraft infrared detection». *Journal of Optics A: Pure and Applied Optics*. 11:4. 045703 doi:10.1088/1464-4258/11/4/045703. http://iopscience.iop.org/1464-4258/11/4/045703

Marshall Brain, «How Biological and Chemical Warfare Works». In *How stuff works*. http://www2.jogjabelajar.org/modul/how/b/biochem_war/biochem-war.htm

Memoirs of Jitendra Kumar Singh (C) 1961 uor. http://alumni.iitr.ernet.in/LinkClick.aspx?fileticket=TJO8UZlbmvw%3D&tabid=38&mid=562

Mihai-Oroian, C.; Oroian, I.; Tomoiagă, L. Comşa, M. and Ch. Iederan (2011) «The influence of climatic conditions on the main vine diseases in terms of chemicals application». aab Bioflux, 2011, Volume 3, Issue 3. *Advances in Agriculture & Botanics-International Journal of the Bioflux Society*. http://www.aab.bioflux.com.ro

NarHideaway. http://www.wholesome-food.org.uk/burr.html

Notni, J., Šimeček, J., Hermann, P. and Wester, H.-J. (2011) «trap, a Powerful and Versatile Framework for Gallium-68 Radiopharmaceuticals». Chemistry - A European Journal, 17.52: 14718–14722. doi: 10.1002/chem.201103503. http://onlinelibrary.wiley.com/doi/10.1002/chem.201103503/abstract

O. Nicetic, D.M. Watson, G.A.C. Beattie, A. Meats and J. Zheng (2002) Integrated pest management of two-spotted mite *Tetranychus urticae* on greenhouse roses using petroleum spray oil and the predatory mite *Phytoseiulus persimilis*. *Experimental and Applied Acarology*. 2001. 25 (1) 37-53, doi: 10.1023/A:1010668122693. http://www.springerlink.com/content/q0373m798339uuu8/

Plastic leds Break Telecommunications Barrier; Widespread Applications In Fiber Optics Possible. American Society For Technion - Israel Institute Of Technology http://www.technion.ac.il/

Philips, C.R. et al. (2011) «Fifty Years of Cereal Leaf Beetle in the U.S.: An Update on Its Biology, Management, and Current Research». *Journal of Integrated Pest Management*. ISSN: 2155-7470, Online issn: 2155-7470. DOI: 10.1603/IPM11014. Volume 2, Issue 2, pages C1-C5. http://esa.publisher.ingentaconnect.com/search/download?pub=infobike%3a%2f%2fesa%2fjipm%2f2011%2f00000002%2f00000002%2fart00001&mimetype=text%2fhtml

Riddell, Mary. «Partying without politics». *The Observer*, Sunday 3 June 2001 03.20 bst Article history. http://www.guardian.co.uk/politics/2001/jun/03/election2001.uk28

Samsung Electronics Announces Eco-Management 2013 Initiative. http://www.samsung.com/us/aboutsamsung/news/newsIrRead.do?news_seq=14161&news_ctgry=irnewsrelease

The MacTutor History of Mathematics archive: Sir Isaac Newton. http://www.gap-system.org/~history/Biographies/Newton.html/

UMINA, Paul A.; Ary A. HOFFMANN and Andrew R. WEEKS (2004) «Biology, ecology and control of the Penthaleus species complex (Acari: Penthaleidae)». *Experimental & Applied Acarology*, Volume 34, Issue 3-4, pp 211-237. http://rd.springer.com/article/10.1007/s10493-004-1804-z#

Wikipedia: Entry for ***coercion***. http://en.wikipedia.org/wiki/Coercion

Wikipedia, the free encyclopedia. Imagine a world without free knowledge. SOPA and PIPA - Learn more. http://en.wikipedia.org/wiki/Wikipedia:SOPA_initiative/Learn_more. 01/18/2012

Dictionaries and encyclopaedias:

AllWords.com - English with Multi-Lingual Search -includes translation
http://www.allwords.com

Cambridge Dictionaries Online. Cambridge University Press 2011.
http://dictionary.cambridge.org/

Collins English Dictionary On-Line. Collins 2011.
http://www.collinsdictionary.com/

CROWTHER, J. (ed.) 1995. *Oxford Advanced Learner's Dictionary of Current English.* (5th edition.) Oxford: Oxford University Press. (ALD5)

Eric Weisstein's World of Science.
http://scienceworld.wolfram.com/

Glossary of Terms Used in Medical Chemistry
http://www.chem.qmw.ac.uk/iupac/medchem/index.html

Glossary of Terms Used in Physical Organic Chemistry
http://www.chem.qmw.ac.uk/iupac/gtpoc/

GreenFacts Glossary. Facts of health and the environment.
http://www.greenfacts.org/glossary/

Oxford Dictionaries Online. 2012 Oxford University Press.
http://oxforddictionaries.com/

Longman Dictionary of Contemporary English. Pearson 2011.
http://www.ldoceonline.com/

Longman Essential Activator (LEA). Pearson 1997.

Macmillan Dictionary and Thesaurus. Macmillan Publishers Limited 2009-2012
http://www.macmillandictionary.com/browse/british/
http://www.macmillandictionary.com/

Maths spoken here. An arithmetic and algebra dictionary. Lessons and information on specific topics in mathematics. Includes drawings and formulas.
http://www.mathnstuff.com/math/spoken/here/1words/words.htm

Plant Facts: Glossary
http://plantfacts.osu.edu/glossary/
http://plantfacts.osu.edu/

Pronunciation help
http://www.cooldictionary.com/pronounce.mpl

SINCLAIR, J. et al. (eds.) 1995. *Collins COBUILD English Dictionary*. (2nd edition.). London & Glasgow: Collins. (C0BUILD2)

SUMMERS, D. (ed.) 1995. *Longman Dictionary of Contemporary English*. (3rd edition.). Harlow: Longman. (LD0CE3)

The Chemistry Consortium Online Chemistry Dictionary.
http://library.thinkquest.org/10676/dict.html

Webster's 1828: http://www.christiantech.com/, http://1828.mshaffer.com/

Merriam Webster Dictionary and Thesaurus Online.
http://www.merriam-webster.com/

Corpora:

- Ceramics Corpus
  American Ceramic Society Bulletin. ACS. USA. (1996-1997)
  Interceram. International Ceramic Review. Verlag Schmid. Freiburg, Germany. (1996-1997)
  Journal of the American Ceramic Society. ACS. USA. (1996-1997)

- SIMPSON, R. C.; S. L. BRIGGS, J. OVENS, and J. M. SWALES. (1999) T*he Michigan Corpus of Academic Spoken English*. Ann Arbor, MI: The Regents of the University of Michigan:
  Interview with Botanist. Rackham Div: BS; File ID: INT175SF003
  Graduate Student Research Interview. 2 Rackham Div: NA; File ID: INT425JG002
  Graduate Physics Lecture Academic Division: Physical Sciences and Engineering. Transcript ID: LES485MG006

Media Union Service Encounters. Transcript ID: SVC999MX104
Science Learning Center Service Encounters. Transcript ID: SVC999MX148
Science Learning Center Service Encounters. Transcript ID: SVC999MX148
Spring Ecosystems Lecture. Academic Division: Biological and Health Sciences. Transcript ID: LES425SU093

- *The British National Corpus*, version 3 (BNC XML Edition). 2007. Distributed by Oxford University Computing Services on behalf of the BNC Consortium. URL: http://www.natcorp.ox.ac.uk/

- UKWaC British English Web Corpus

Bibliography:

Bauer, L. (1983) English word-formation. Cambridge: Cambridge University Press.

Campoy, M. C. and Coll, J. F. (2001) «Degree and Size Prefixes in Scientific English: Neologisms With *Ultra-, Super-, Hyper-, Extra*, and *Over-*». in Palmer, J. C.; Posteguillo, S.; Fortanet, I. (Eds.) *Discourse Analysis and Terminology in Languages for Specific Purposes*. Publicacions de la Universitat Jaume I. 313-324.

Dirven, R. (1997) «Emotions as cause and the cause of emotions» in Niemeier, S. and R. Dirven, eds. *The Language of emotions*. John Benjamins: Amsterdam/ Philadelphia. 55-83

Glowka, W. Bonner, K. A. and B. K. Lester (1999) «Among the New Words». *American Speech*. 74.1: 71-94.

Glowka, W. et al. (1999), «Among the New Words». *American Speech*. 74.3: 298-323.

Quirk, R.. et al. (1985) *A Comprehensive Grammar of the English Language.* London: Longman.

Van Dyke, C. (1992) «Old Words for New Worlds: Modern Scientific and Technological Word-Formation». *American Speech*. 67.4: 383-405.