

Technical English

Electronics and Electrical Communications Department

Graduate Studies

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This course aims to improve the student's abilities in technical English:

- to understand when listening or reading and
- to correctly convey the information when speaking or writing.

Required texts:

- "Elements of Style" by Willam Strunk. Available at:
<http://sut1.sut.ac.th/strunk/>
- "Technical Writing" by Ronald B. Standler. Available at:
<http://www.rbs0.com/tw.htm>
- "Elements of Style for Web Design" by Christine A. Quinn. Available at:
<http://www.stanford.edu/~cquinn/papers/bostonpaper.html>
- "Guidelines for Typography in NBCS" by Charles Hedrick. Available at:
<http://www.nbc.rutgers.edu/~hedrick/typography/typography.janson-syntax.107514.pdf>

Resources on writing and oral presentations:

<http://owl.english.purdue.edu/handouts/>
<http://www.angelfire.com/stars/techwriter/index.html>

Course outline:

1. Introduction
2. Study skills
 - <http://www.coun.uvic.ca/learn/read.html>
 - <http://www.adm.uwaterloo.ca/infocs/study/>
 - http://directory.google.com/Top/Reference/Education/How_To_Study/
3. Effective reading
 - <http://www.une.edu.au/tlc/aso/reading.htm>
 - <http://www.jcu.edu.au/studying/services/studyskills/effreading/>
4. Elements of Style: Elementary rules of usage
5. Elements of Style: Elementary principles of composition
6. Technical Writing

7. References and bibliography
8. Elements of Style for Web Design
9. Typography and tools (Unix, TeX/LaTeX, FrameMaker, ...)
10. Visuals
11. Specific documents: Resume, Cover letter, Statement of purpose
 - <http://jobsmart.org/tools/resume/>
 - <http://www.careers.ucr.edu/Students/Graduates/CV/>
 - <http://www2.sjsu.edu/faculty/gcallaghan/graduate/winningstatement.htm>
 - <http://www.cs.umd.edu/~arun/grad/sop.html>
12. Specific documents: Research proposal/ Grant application
 - <http://cpmcnet.columbia.edu/research/writing.htm>
 - <http://www.research.fsu.edu/facultystaff/resources.html>
 - http://vpf-web.harvard.edu/osr/proposal/prop_pr_tips.shtml
 - <http://www.seanet.com/~sylvie/grants.htm>
 - <http://www.cpb.org/grants/grantwriting.html>
13. Specific documents: Paper, Thesis
 - <http://www-2.cs.cmu.edu/afs/cs.cmu.edu/user/mleone/web/how-to.html>
 - <http://www.sce.carleton.ca/faculty/chinneck/thesis.html>
 - <http://owl.english.purdue.edu/handouts/general/>
14. Conference presentations
 - <http://www.cs.wisc.edu/~markhill/conference-talk.html>
 - <http://www.psichi.org/conventions/tips.asp>
15. Interviews
16. Applying for a university abroad
 - http://www.grad.umn.edu/prospective_students/application_information/process/
 - <http://polaris.gseis.ucla.edu/pagre/grad-school.html>

To benefit from the course please

- read through the material *before* coming to class
- come prepared with your questions
- get involved in the discussion
- complete all the assignments

Technical English, Lecture 2: Study skills

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Goal definition

There are four main components to any goal.

who: The person responsible to achieve the goal.

what: The specific action needed. This must be a measurable quantity and you must clearly define how to measure it.

when: The time at which the goal should be achieved. For some tasks this is a hard limit. For others, a later accomplishment is acceptable.

how: What are the conditions under which the person operates?

Before starting any action, you must define your goal.

Think for yourself:

- Why am I studying for this degree?
- Why am I here today (and not studying at home instead for example)?
- When do I expect to finish this degree?
- What do I want to achieve?

1/12

Will I remember?

In some cases, we study to memorize. We must understand the human's memory system to achieve this goal. Is your memory

- ROM or RAM?
- Static or Dynamic?
- Linearly addressed or associative?

Let us plan

In order to remember what you study you need to plan for it on several steps.

- What shall I do *before* I study?
- When I am starting, how do I *prepare*?
- Ok, once I am in the middle of everything, what do I do *during* the study period?
- Once done, is there something I should do *after* studying?

4/12

Preparation

- You must select the order and quantity of the material you are going to study.
- The brain cannot remember too many things at once. A good method that works with many people is to organize the material into groups with 5 to 7 items per group.

6/12

Before studying

There are three issues here:

- Think about your interest in the subject.
- Decide to remember!
- Build some background about the topic. (Your memory is associative!)

5/12

During

- Involving more senses allows your brain to remember. Try reciting what you are reading.
- Otherwise, try to visualize it.
- Always associate the new material with the old one.

7/12

After

- You should revise and consolidate what you learned. The best is to revise on the following day (10 min) then to review it in a week (5 min) and finally in a month (2–4 min).
- Practice what you learned! Use it often.

Otherwise, the material will decay in your memory.

8/12

Time management and Direction management

Both a clock and a compass must be used.

A quick movement in the wrong direction may be worse than no movement!

10/12

Do I have enough time?

The simple answer is *YES*.

You have 24 hours per day just as everyone else. Eight of these should be used for sleeping. You just need to plan the rest correctly.

Sleeping?!

9/12

Schedules

Our body works well with repeated schedules.

- Study at the same time every day.
- Plan the study periods to follow the class periods.
- Take a break for 10 min every hour.
- Plan for weekly reviews.
- Allow yourself some flexibility in your weekly schedule.
- Allow for some recreation time.

11/12

Contractual time management

You are a trader with a large capital, use it wisely.

1. Establish a contract with yourself.
2. Observe your behavior.
3. Account yourself at the end of the task.
4. Punish or Compensate yourself.
5. Strive to improve next time.
6. Keep on checking yourself (a little blame will prevent you from becoming overconfident).

Technical English, Lecture 3: Can you read me?

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- Reading Effectively
- Reading Efficiently
- Reading Critically
- Reading Intelligently

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1/13

The PSQ5R method

Purpose

Purpose: Why are you reading this?

Scan: Get a general overview and establish your purpose of the reading.

Question: Be active and ask questions regarding the section headings and what the author is presenting.

Read selectively: Read to find answers for your questions.

Recite: Without looking, recite the answers.

Record, Recall: Jot your answers in keywords, make your mind map, visualize the information, rewrite it in your own words.

Reflect: "Elaborate" new information, relate parts, connect with personal experience.

Review: Look at your questions, notes, answers, and what you recalled. Make any necessary corrections to your mind map.

Information: Skim over most things until you find it. (newspaper)

Reasons, learning: Read deliberately and critically. (research paper)

Enjoyment of writing: Several readings to feel the art. (poetry)

Get the idea: Skim some parts and dwell on others. (novel)

Revision: Read with your own notes, identify basic principles, re-view your earlier questions about the text. (studying for an exam)

Getting an overview

- Get a feel for the book: front cover, back cover, graphics, number of pages, length of chapters.
- Get some background: publication date, foreword, introduction, author biography.
- Key information: table of contents, chapter headings.

4/13

Can this map help me?

- It shows you exactly how much you have learned.
- With enough time, you will actually recall more.
- You will learn how to use different strategies for remembering.

You should also be noting down questions about things you have forgotten, so you can look them up.

6/13

Mind maps

- Make a Mind-Map of all you can remember in the chapter.
- Do not stop until at least half an hour is up. More will surface if you give yourself the time.
- *Do not refer to the text while doing this.*
- If you come to a dead end, try alternative memory techniques:
 - associating ideas, either from within the section itself or from other related material;
 - visualizing pages, pictures, graphs etc.;
 - recalling personal associations that may have come to mind;
 - staring out the window and blanking out your thoughts; . . .

This is strenuous, but it is rewarding.

5/13

Reflections

When you are finished, you should try to figure out how all the material you have remembered fits together - not necessarily as it is presented in the book, but as it is organized in your own thinking.

Note down

- your opinions of it,
- questions about it,
- disagreements with it, and so on.

7/13

What about books?

You should get a general overview of the book's structure.

1. Does the book have information on the inside cover?
2. Does the book have a Preface?
3. Does the book have a Table of Contents?
4. Does the book have Appendices? If yes, name them.
5. Does the book have a Glossary?
6. Does the book have an Author Index?
7. Does the book have a Subject Index?

8/13

The background

Even more information about the book:

1. Who is the author, and what are his/her credentials?
2. What is the date and location of publication?
3. What is the author's purpose in writing this book?

10/13

How is the book organized?

The organization of the material is also important.

1. How many chapters are in the book?
2. Where are the references located in the book?
3. Does the book have special Introductory and Summary chapters?
4. What are the focus and perspective of the entire book?
5. What chapter aids does the author provide?
6. How are the chapters organized (headings, sub-headings, italicized words and/or words in heavy print, etc.)?

9/13

What about difficult texts?

If the content is complicated some steps can help you.

- Read aloud.
- Use a dictionary.
- Be an active reader: ask questions.
- Compare with other texts (lecture or tutorial notes, other books).
- Break the text into small sections.
- Discuss with colleagues, mentors, professors, ...

11/13

This is another task. Use these hints in training.

- Determine your purpose before reading. If you only need main ideas, then allow yourself to skim the material.
- Try to avoid focusing on every word, but rather look at groups of about three words.
- Improve your vocabulary. Familiarize yourself with new words to be faster next time.
- Read more!
- For short periods every day, read faster than your normal speed.

12/13

- Define your purpose.
- Read, read, and read.
- Map it in your mind, reflect on it, and write short summaries.

13/13

Technical English, Lecture 4: Elementary rules of usage

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1. Form the possessive singular of nouns with 's.
2. In a series of three or more terms with a single conjunction, use a comma after each term except the last.
3. Enclose parenthetic expressions between commas.
4. Place a comma before 'and' or 'but' introducing an independent clause.
5. Do not join independent clauses by a comma.
6. Do not break sentences in two.
7. A participial phrase at the beginning of a sentence refers to the grammatical subject.
8. Divide words at line-ends according to their formation and pronunciation.

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1/9

Possessive

Follow this rule whatever the final consonant. Thus write,

- Charles's friend
- Burns's poems
- the witch's malice

Exceptions

Exceptions are the possessives of ancient proper names in -es and -is, the possessive Jesus', and such forms as for conscience' sake, for righteousness' sake. But such forms as Achilles' heel, Moses' laws, Isis' temple are commonly replaced by

- the heel of Achilles
- the laws of Moses
- the temple of Isis

The pronominal possessives hers, its, theirs, yours, and oneself have no apostrophe.

Commas

We use them

- in a series of three or more items,
- in parenthetical expressions, or
- before 'and' or 'but' according to the fourth rule.

4/9

Independent clauses

It is nearly half past five, and we cannot reach town before dark.

It is nearly half past five; we cannot reach town before dark.

It is nearly half past five. We cannot reach town before dark.

6/9

Parenthetical expressions

- The best way to see a country, unless you are pressed for time, is to travel on foot.
- The audience, which had at first been indifferent, became more and more interested.

The second example may be written as:

The audience was at first indifferent. Later it became more and more interested.

What about "The candidate who best meets these requirements will obtain the place."?

5/9

Breaking sentences

"I met them on a ship several years ago. Coming home from Jiddah to Suez."

Do not use periods instead of commas!

7/9

Walking slowly down the road, he saw a woman accompanied by two children.

Who is walking?

What about "On arriving to the train station, his friends met him."?

- A good dictionary helps!
- It is sometimes possible to reword the paragraph and avoid all hyphenations.
- If you are setting your paragraph
 - by hand then follow the rules given in the book regarding formation and pronunciation,
 - otherwise use a good computer program.

Technical English, Lecture 5: Principles of composition

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The paragraph

- A subject requires subdivision into topics, each of which should be made the subject of a paragraph.
- The beginning of each paragraph is a signal to the reader that a new step in the development of the subject has been reached.
- As a rule, single sentences should not be written or printed as paragraphs. The possible exception is for sentences of transition that indicate the relation between the parts of an exposition or argument.

9. Make the paragraph the unit of composition: one paragraph to each topic.
10. As a rule, begin each paragraph with a topic sentence; end it in conformity with the beginning.
11. Use the active voice.
12. Put statements in positive form.
13. Omit needless words.
14. Avoid a succession of loose sentences.
15. Express co-ordinate ideas in similar form.
16. Keep related words together.
17. In summaries, keep to one tense.
18. Place the emphatic words of a sentence at the end.

1/13

Within the paragraph

Do you remember what we said about speed reading?

1. The topic sentence comes at or near the beginning;
2. the succeeding sentences explain or establish or develop the statement made in the topic sentence; and
3. the final sentence either emphasizes the thought of the topic sentence or states some important consequence.

The relation of the paragraph to what precedes, or its function as a part of the whole, may need to be expressed.

"I have recently graduated from the Electrical and Communications Engineering department at Cairo University where I completed a Bachelor program. My decision to pursue graduate studies in Wireless Communication Systems Engineering was the natural culmination of my undergraduate coursework in Electrical and Electronics Engineering where I majored in Communication Systems. Also, I wanted to broaden my horizons and gain relevant exposure in the field of Hardware Design."



"I received my bachelor degree in 2006, majoring in communications, from the Electronics and Communications Engineering Department of Cairo University. Graduate studies in Wireless Communication Systems Engineering is a natural continuation to my undergraduate coursework. It will also help me to gain relevant experiences in the field of Hardware Design."

Related words

Keep the words related in thought together.

1. Cast iron, when treated in a Bessemer converter, is changed into steel.
2. By treatment in a Bessemer converter, cast iron is changed into steel.
3. By treatment in a Bessemer converter, cast iron transforms into steel.
4. By treatment in a Bessemer converter, cast iron becomes steel.

Use the same form for "parallel" structures.

In spring, summer, or in winter.

In spring, summer, or winter. (In spring, in summer, or in winter.)

This rule applies to itemizations and enumerations.

Tenses

In technical papers:

- Keep to the present tense. The results of your past experiments are "facts" that are still true now.
- Avoid future and past!
- You may use present participle in conclusions. Often, you can still use the present tense.

This paper has shown ⇒ The results show

End with a punch

The proper place for “prominent” words is usually the end of the sentence. Compare

1. This steel is principally used for making razors, because of its hardness.
2. Because of its hardness, this steel is principally used in making razors.
3. Because of its hardness, the principal use of this steel is to make razors.

12/13

Grouping the rules

We may divide those rules in two groups depending on what they provide

Clarity

9. Write one paragraph to each topic.
12. Put statements in positive form.
13. Omit needless words.
15. Express parallel ideas in similar form.
16. Keep related words together.
17. Keep to one tense in summaries.

Style

10. Begin each paragraph with a topic sentence.
11. Use the active voice.
14. Avoid groups of loose sentences.
18. Place the emphatic words of a sentence at the end.

13/13

Technical English, Lecture 6: Technical writing

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Objects, properties, and values

Watch out for the difference between

a resistor and a resistance,
a capacitor and a capacitance.

A resistor is soldered,

a resistance is measured, and

the value of the resistance is 470 ohms.

Numbers are important in technical documents.

- Be accurate.
 - “The forward bias voltage of a diode is *small*.” (How small is small? Should it be the voltage across the diode?)
 - “Digital disks are *better* than the analog ones.” (In what? By how much?)
- Compare the same dimensions.
“The value of R is twice that of C.”
- Use a *small* space to separate groups of three digits in a number: 123 456 and not a comma 123,456. (Note the difference between 123,456 and 123,456. The latter is two numbers separated by a comma.)
- Insert a ‘0’ before the fractional point for numbers between -1 and 1: 0.53 not .53.

1/18

Additions

Parallel work adds in one sense but not the other. Two students working together on a project for a week

- produce more work than another student working alone for the same week,
but
- each gets a work experience of one week not two!

Zero and infinity

In calculations, engineers often neglect some terms if they are much smaller than other terms. These are “zeros” while very large terms are “infinities” .

- Remember that in reality these are not the mathematical zero or infinity.
- In a lab measurement or in a simulation, you will never have a zero or infinity.
- If you report a result below or above the range of your measuring instrument, you may write “ v_{out} is less than 0.2 mV” but do not say that it is zero.

4/18

Watch your units

- All values that have dimensions must have their units specified.
- When written out (not abbreviated), all units start with a small letter: ohm, volt, and hertz.
- When abbreviated, units after the name of a person have a capital first letter: Hz, V, A.
- Only multiplier prefixes of 10^6 or more have a capital letter. Watch out for the difference between $M = 10^{+6}$ and $m = 10^{-3}$.
- A *nonbreakable* space is required between the value and the unit. Write 5 kHz and not 5kHz.
- Table heading or graphs should be labeled as kV or mV but not volts $\times 10^{-3}$.
- The ‘M’ and ‘G’ in computer memories and drives are currently ambiguous. Specify what you mean.

6/18

How do we write numbers?

In general, single digit numbers (zero through nine) are spelled out, while numbers of two or more digits (10, 20th Century, ...) use figures. Exceptions:

1. Use figures for all numbers when there are numbers of two or more digits for related quantities in the same sentence , such as “6 of 23 physicians recommend” .
2. Use figures when a unit of measurement follows: “5 A” .
3. Spell approximate values and do not abbreviate the unit (if any): about five years, two orders of magnitude, about four times larger, several kilovolts, and a few tens of megahertz.
4. Use figures when mathematical operations are implied: factor of 2 and 3×3 matrix.
5. Spell a number at the beginning of a sentence otherwise rewrite the sentence.

5/18

a or an?

The rule is simple: Use a if the first letter of the following word begins with a consonant when pronounced. Use an if the first letter of the following word begins with a vowel sound (a, e, i, o, u) when pronounced.

What do you use for the following?

UPS	RS-232	hour
1 $k\Omega$ resistance	8 V potential difference	illogical rule

7/18

Not and or

1. no drinking or no eating
2. drinking and eating prohibited
3. no drinking and no eating
4. drinking or eating prohibited
5. You may not eat or drink in this library.
6. Neither eating nor drinking is permitted.

⇒ Attempt to use expressions that are logically correct and difficult to misunderstand.

8/18

Hyphens

Notice that compound words as in

“high-voltage supply” and

“low-voltage system”

have hyphens when they are adjectives. They do not have a hyphen when used as nouns such as in

“There was high voltage on the wires that were supposed to carry low voltage.”

There are many other rules regarding hyphens in the booklet.

10/18

Pronouns

In English, the pronouns he and his are not neutral. Most native speakers will prefer

“Engineers represent their profession at all times.”

over

“An engineer represents his profession at all times.”

9/18

Verb tense and voice

As we discussed before, attempt to write using

- the present tense and
- the active voice.

11/18

What does 10/12/06 mean?

- Tenth of December 1906.
- Tenth of December 2006.
- Twelfth of October 2006.
- Sixth of December 2010.

It is much better to write 10 December 2006. This method

conveys the correct meaning clearly and

has a logical order (days then months then years).

Examples from the T_EXbook: punctuation

- A comma within a formula is different from that within the regular text. The equation $x = f(a, b)$ must not be broken after the comma but in $x = a, b$, or c we can put ' $x = a,$ ' on one line and ' $b,$ ' on the following.

- Notice the difference between

for $x = a, b$, or c (wrong)

and

for $x = a, b$, or c (right)

in the spacing around the first comma.

(Use a nonbreakable space for 'or c '.)

The power, P , dissipated in any two-terminal device is given by

$$P = IV \tag{1}$$

where I is the current in the device and V is the voltage across the device. For the special case of a resistor, the relation between voltage and current can be used to express the power as a function of only voltage:

$$P = \frac{V^2}{R}. \tag{2}$$

Equations should be

- punctuated,
- numbered, and
- fitted within a single line if possible.

Examples from the T_EXbook: spacing

- Within the text of a paragraph, formulas should be separated by words not just by commas.

Define Fibonacci's numbers by $F_n = F_{n-1} + F_{n-2}$, for $n \geq 2$ not by $F_n = F_{n-1} + F_{n-2}, n \geq 2$.

- Side conditions in displayed equations must have extra spaces.

(wrong) $F_n = F_{n-1} + F_{n-2}, n \geq 2. \tag{3}$

(right) $F_n = F_{n-1} + F_{n-2}, \quad n \geq 2. \tag{4}$

- Notice the difference between unary operators as in ' $-a$ ' and binary operators as in ' $- a$ '. This is important when you need to break a long formula into multiple lines.

It is generally correct to produce formulas like

$$x_1 + \cdots + x_n \quad \text{and} \quad (x_1, \dots, x_n),$$

but wrong to produce formulas like

$$x_1 + \dots + x_n \quad \text{and} \quad (x_1, \cdots, x_n).$$

In general, the vertically centered dots appear between operators or relations while the low dots appear between commas and when things are juxtaposed with no signs between them at all.

Summary

There are many rules but they all guide you to

- write logically correct sentences,
- write grammatically correct sentences, and
- write sentences that are difficult to misunderstand.

Try to write $I(\lambda) = \iint_D g(x, y) e^{i\lambda h(x, y)} dx dy$. Notice the spacing between the integral signs. Then, try the following displays.

$$\prod_{j \geq 0} \left(\sum_{k \geq 0} a_{jk} z^k \right) = \sum_{n \geq 0} z^n \left(\sum_{\substack{k_0, k_1, \dots \geq 0 \\ k_0 + k_1 + \dots = n}} a_{0k_0} a_{1k_1} \dots \right).$$

$$\sum'_{x \in A} f(x) \stackrel{\text{def}}{=} \sum_{\substack{x \in A \\ x \neq 0}} f(x).$$

$$\underbrace{\{a_1, \dots, a_k, b_1, \dots, b_l\}}_{k+l \text{ elements}}.$$

$$2 \uparrow \uparrow k \stackrel{\text{def}}{=} \underbrace{2^{2^{\dots^2}}}_k.$$

Technical English, Lecture 7: Bibliography

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Why?

There are several reasons for citing the references.

- The reader may be interested to know more details available in the original source.
- The reader may want to check the correctness of the information. If it is incorrect, the reader will notify (or blame!) the right person.
- It is problematic to seem as if you are claiming other people's work. It is punishable to lie and claim other people's work.
- The references are useful for historical reasons.

A reference is a source to which you can refer for authoritative facts.

The bibliography is

- a list of printed works having some common theme
or
- a list of the sources of information to which a person refers.

Within the text you put a *citation* to a reference in the bibliography.

1/11

When shall I cite?

Obviously, too many citations may distract the reader from the main flow of thought. However,

you must cite direct quotations, figures, tables, slides, . . . ;

you should cite substantial information;

and

you should not cite general facts.

Have you ever "borrowed" information from the web or scanned a printed material then used it?

Which sources?

Since a reference is a source for *authoritative* facts that the reader might want to *view*,

- you should avoid proprietary materials, trade magazines, and the Internet;
- you should consider the case of whether to cite general standards or not depending on the level of the readership;
and
- you should cite archival materials such as journal and conference publications as well as books.

4/11

Format within the work

There are various conventions. The most widely spread methods use

- a footnote below the page,
- the name of the author and the year as in [Fahmy, 2003] with the full reference details at the end of the work,
or
- a numeric reference as in [1] or¹ with the reference details at the end.

The first two are long (and repetitive in the case of footnotes) but are independent of the location in your work and are easier to verify for correctness.

The last one is terse but depends on the location and is harder to verify. Technical journals prefer this one and you will have to use it.

6/11

Look at our history

الحديث له متن وسند.

السند يصنف إلى متواتر أو مشهور أو عزيز أو غريب.

الحديث الصحيح سواء أكان متواتراً أم لا هو ما رواه

١. عدل

٢. ضابط (تام الضبط)

٣. عن مثله من أول السند لمنتهاه

٤. بدون شذوذ

٥. ولا علة.

Can you become what our historians call “عالم محقق”?

5/11

Format at the end

The “end” might be the end of each chapter in a book or the end of the whole book. Sometimes it is both.

The references appear at the end

- in their order of appearance,
- alphabetically,
or
- chronologically.

Use a good tool to help you.

7/11

There are many styles depending on the place of publication.

The IEEE transactions style:

1. N. Takagi, "Generating a power of an operand by a table look-up and a multiplication," in *Proceedings of the 13th IEEE Symposium on Computer Arithmetic, Asilomar, California, USA*, pp. 126–131, July 1997.
2. S. F. Oberman and M. J. Flynn, "Design issues in division and other floating point operations," *IEEE Transactions on Computers*, vol. 46, pp. 154–161, Feb. 1997.

The "plain" style: (notice the order)

1. Stuart F. Oberman and Michael J. Flynn. Design issues in division and other floating point operations. *IEEE Transactions on Computers*, 46(2):154–161, February 1997.
2. Naofumi Takagi. Generating a power of an operand by a table look-up and a multiplication. In *Proceedings of the 13th IEEE Symposium on Computer Arithmetic, Asilomar, California, USA*, pages 126–131, July 1997.

8/11

Levels of reputation

In general, journals are better than conferences. This means that some conferences are better than some journals. ⇒ Find out about your own field.

- Journals (transactions) are more technical than "letters" which in turn are better than magazines.
- For conferences, the order is
 1. conferences (discussions of common interests), then
 2. symposiums (formal meetings with short addresses on a topic), and finally
 3. forums (public meetings for open discussions).

Commercial and industrial exhibits are *not* good references.

(Unless you are referring to the date a company released a product for example.)

10/11

- The reputation of a publication depends on many factors and each field has its own order.
- The reputation takes a few years to build up.
- Reputed places have a good peer review process usually with multiple reviewers and probably two revisions.
- The acceptance rate at some locations might be an indicator but it is sometimes incorrect.

9/11

Your own lists

For your own reference, make the following lists according to your specific field of research.

1. The major journals and magazines.
2. The major conferences.
3. The major academic researchers and what they are doing.
4. The major industrial researchers and what they are doing.
5. The major funding agencies and what they are requesting in their calls for proposals.

11/11

Technical English, Lecture 8: Web pages

Hossam A. H. Fahmy

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Focus on your goals

When composing a set of pages, think about

- the purpose,
- the audience,
- the work of the “competition”,
- the content and the means to provide it,
- the look and feeling you want to give for your pages,
- the timeline (when are the pages required and how often should they be updated), and
- those who will test the pages.

What goes on the web?

As time passes, people provide more of the following materials on the web,

in universities :

- research publications,
- class materials,
- schedules,
- announcements, . . .

in companies :

- product manuals,
- white papers,
- marketing and sales materials,
- announcements, . . .

You might want to design and publish some pages regarding your work either to the whole world or internally within your organization.

1/9

Questions

- What is the first thing that appears in a page?
- What do you do if the page does not satisfy your request?
- What is the speed of the connection that you often use?
- Where you ever “lost” on the web?
- Do you turn off the download of images sometimes?
- How often did you get “404 Not Found” ?

Within the page :

- use descriptive titles,
- put the important material first,
- limit the content on the page,
- limit the size (in bytes) of the page to speed the download,
- consider the balance of “white” and “gray” ,
- use the graphics coherently, and
- avoid generic information.

Between pages :

- avoid “dead-ends” ,
- ensure that all the links are working,
- do not use *click here*.

4/9

Through the big maze

The organization of the site is important.

- Users think differently and might want to reach the information in different ways. Does your site provide that?
- Is there a way to search within the site?
- Will I be able to know my position in your site map easily?
- How many links does a reader use to reach the required information?
- How wide and how deep is the site tree?

6/9

We want to provide a focused message.

- Non-textual materials (graphics, audio, video, ...) are good aids to the text in technical documents. Consider the information they provide when deciding their position and size.
- A paragraph must provide some information. It should not be just a list of links. A reader is easily distracted.
- The whole site should have a similar design to give a feeling of continuity.

5/9

Standards and extensions

The World Wide Web Consortium (<http://www.w3.org/>) specifies the different web standards.

- What are the languages of the web?
- What are cascaded style sheets?
- What other languages may be used to provide dynamic content?

W3C provides some tutorials and helping tools.

7/9

- Do not link to “under construction” pages!
- Do not use unrelated images or interfering backgrounds.
- Do not steal.
- Provide “ALT” tags.
- Provide the information of the webmaster.
- Think about the disabled.

If you do not already have a personal webpage then start one at a free hosting service provider. For example

1. <http://www.freehostia.com/>,
2. <http://www.awardspace.com/>, and
3. <http://www.freewebs.com/>.

In that page, describe your research interests using the lists that you created last week.

Technical English, Lecture 9: Typography and tools

Hossam A. H. Fahmy

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Readability

How easy can you read? It is affected by

- line length (45 to 75 characters is the optimal range),
- letter spacing,
- word spacing, and
- line spacing.

Lower case letters are better for readability than upper case letters.

Typography is the *art* and *technique* of setting written subject matter in type using a combination of

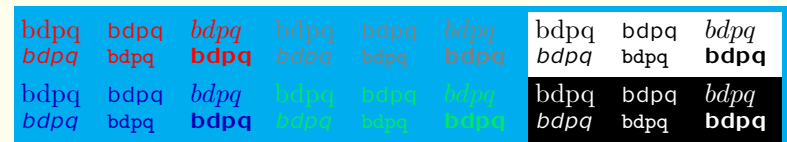
- typefaces,
- point size,
- line length,
- leading (line spacing), and
- letter spacing.

1/9

Legibility

How easy and quickly can you recognize a letter or word? It is affected by

- ink,
- paper,
- colors, and
- the font design.



To *print* running text, the best are the straight serified fonts.

Fonts

- Fonts do not scale linearly in all directions. Smaller sizes are wider than a linearly scaled down version.
 - Ten-point type is different from magnified five-point type.
- Fonts have ligatures: ff, fi, fl, ffl, and ffi versus ff, fi, fl, ffl, and ffi.
- A good combination of fonts and typesetting software allow for automatic kerning.

AV We Table
AV We Table

- A font has a *color* (how gray is the page) and a *weight* (how thin or thick are the vertical strokes).

4/9

Simple traditional rules

- The 'best' line length is one where the eye will not have to move at all while reading it. (One fixation.)
 - A poster is read from a distance and you must use a font scaled correctly for that effect. (Ten-point type is different from magnified five-point type.)
- The best line spacing depends heavily on the difference between the x-height and the lowest point (the descenders) in the upper line.
- The gray color of the page should not exceed 30% of the black at a distance of 40 *cm*.

6/9

Numerals

Look at the difference between

His address is: 46 street 153, just next to the school.

and

His address is: 46 street 153, just next to the school.

Oldstyle numerals (minuscule or mediaeval numbers) are used in mixed text.

- They do not look like a distinction while capital numbers are.
- They do not take attention and disturb the reading flow where there is no demand for that.

0123456789. 0123456789. 0123456789.

5/9

Special effects

If you know how to use your tool properly it is possible to produce various special effects, as shown here with this circular insertion. However, please remember: 1) these effects should be seldom used in long running texts as in your thesis or a published paper, 2) they are useful in posters and presentations, and 3) I did not choose the line breaking locations or the hyphenations produced here. They were automatically generated. It takes time (probably years) and patience to learn. If you like typography and put some effort to learn your tools you will soon become a master producing the finest quality material. Just *time and effort!*

The area of a circle is a mean proportional between any two regular and similar polygons of which one circumscribes it and the other is isoperimetric with it. In addition, the area of the circle is less than that of any circumscribed polygon and greater than that of any isoperimetric polygon. And further, of these circumscribed polygons, the one that has the greater number of sides has a smaller area than the one that has a lesser number; but, on the other hand, the isoperimetric polygon that has the greater number of sides is the larger.
[Galileo, 1638]

7/9

You should define your goal and use the appropriate tool.

- Layout tools such as InDesign or QuarkXPress are great to produce magazines.
- Adobe Photoshop is a good tool for posters.
- FrameMaker is used for many technical documents.
- T_EX (and L^AT_EX) are the best for long scientific documents.

T_EX has many points to its advantage in the scientific domain.

Output quality: It is the best tool for typesetting mathematical formulas. It has many rules of typesetting coded in it.

Strength: It is fast, stable, flexible, and reliable. It accepts plain text and produces various output formats.

Free: It has been available in source form for anybody to use (and learn from it) for over 25 years now.

Popularity: It is a standard.

On the negative side, it has a steep learning curve. However, once you use T_EX, it is hard to use anything else.

Technical English, Lecture 10: Visuals

Hossam A. H. Fahmy

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Data, information, and knowledge

- “The amount is 12 237.38.” is a piece of *data*.
- “The amount on your phone bill this month is 12 237.38.” is a piece of *information*.
- “This amount is too high.” is *knowledge*.
- “I should notify the phone company and investigate the matter.” is *wisdom*.

We should try to convey the information by presenting the data in the best way possible.

In most of our technical writing we resort to

- tables,
- graphs,
- schematics,
- figures,
and
- drawings.

Why do we do that?

1/23

Are your aids visual?

Take a look at this table for the proportions of occupational groups who would choose similar work again

PROFESSIONAL AND WHITE-COLLAR OCCUPATIONS	PERCENT	SKILLED TRADES AND BLUE-COLLAR OCCUPATIONS	PERCENT
University professors	93	Skilled printers	52
Mathematicians	91	Paper workers	42
Physicists	89	Skilled auto workers	41
Biologists	89	Skilled steelworkers	41
Chemists	86	Textile workers	31
Firm lawyers	85	Blue-collar workers	24
School superintendents	85	Unskilled steelworkers	21
Lawyers	83	Unskilled auto workers	16
Journalists	82		
Solo lawyers	75		
White-collar workers	43		

Questions

Contrast the two main groups (white-collar versus blue-collar).

1. What is the trend in job satisfaction for both groups as presented in the table?

Is the job satisfaction of both groups similar?

Is there any blue-collar occupation that is more satisfied than a white-collar occupation?

4/23

Questions

Contrast the two main groups (white-collar versus blue-collar).

1. What is the trend in job satisfaction for both groups as presented in the table?
2. Is the job satisfaction of both groups similar?
3. Is there any blue-collar occupation that is more satisfied than a white-collar occupation?

6/23

Questions

Contrast the two main groups (white-collar versus blue-collar).

1. What is the trend in job satisfaction for both groups as presented in the table?

2. Is the job satisfaction of both groups similar?

Is there any blue-collar occupation that is more satisfied than a white-collar occupation?

5/23

Improved table

PROFESSIONAL AND WHITE-COLLAR OCCUPATIONS	PERCENT	SKILLED TRADES AND BLUE-COLLAR OCCUPATIONS	PERCENT
University professors	93		
Mathematicians	91		
Physicists	89		
Biologists	89		
Chemists	86		
Firm lawyers	85		
School superintendents	85		
Lawyers	83		
Journalists	82		
Solo lawyers	75		
White-collar workers	43	Skilled printers	52
		Paper workers	42
		Skilled auto workers	41
		Skilled steelworkers	41
		Textile workers	31
		Blue-collar workers	24
		Unskilled steelworkers	21
		Unskilled auto workers	16

7/23

More questions

1. Are there sub-classes within each group?

What is the order of satisfaction within lawyers?

Are auto workers satisfied more than steelworkers?

8/23

More questions

1. Are there sub-classes within each group?

2. What is the order of satisfaction within lawyers?

3. Are auto workers satisfied more than steelworkers?

10/23

More questions

1. Are there sub-classes within each group?

2. What is the order of satisfaction within lawyers?

Are auto workers satisfied more than steelworkers?

9/23

Enhanced table

PROFESSIONAL AND WHITE-COLLAR OCCUPATIONS	PERCENT	SKILLED TRADES AND BLUE-COLLAR OCCUPATIONS	PERCENT
University professors	93		
Mathematicians	91		
Physicists	89		
Biologists	89		
Chemists	86		
School superintendents	85		
Firm lawyers	85		
Lawyers	83		
Journalists	82		
Solo lawyers	75		
White-collar workers	43	Skilled printers	52
		Paper workers	42
		Skilled steelworkers	41
		Skilled auto workers	41
		Textile workers	31
		Blue-collar workers	24
		Unskilled steelworkers	21
		Unskilled auto workers	16

11/23

Data-ink

A large share of the ink on a graphic should represent the data.
Data-ink is the non-redundant ink arranged to represent the data.

$$\begin{aligned} \text{Data-ink ratio} &= \frac{\text{data-ink}}{\text{total ink used}} \\ &= \text{portion of the ink devoted to the} \\ &\quad \text{non-redundant display of data} \\ &= 1.0 - \text{portion of graphic that can be erased} \\ &\quad \text{without loss of information.} \end{aligned}$$

(Note the use of the words data and information.)

12/23

Font issues

1. Is the use of capital letters in the headings needed? Shall it be small caps instead of regular capital letters?

- Contrast "SKILLED TRADES" to "Skilled Trades".

Shall we use "PERCENT" or just "%"?

How will these two issues affect the size of the table?

14/23

Better table

PROFESSIONAL AND WHITE-COLLAR OCCUPATIONS	PERCENT	SKILLED TRADES AND BLUE-COLLAR OCCUPATIONS	PERCENT
University professors	93		
Mathematicians	91		
Physicists	89		
Biologists	89		
Chemists	86		
School superintendents	85		
Firm lawyers	85		
Lawyers	83		
Journalists	82		
Solo lawyers	75		
White-collar workers	43		
		Skilled printers	52
		Paper workers	42
		Skilled steelworkers	41
		Skilled auto workers	41
		Textile workers	31
		Blue-collar workers	24
		Unskilled steelworkers	21
		Unskilled auto workers	16

13/23

Font issues

1. Is the use of capital letters in the headings needed? Shall it be small caps instead of regular capital letters?

- Contrast "SKILLED TRADES" to "Skilled Trades".

2. Shall we use "PERCENT" or just "%"?

How will these two issues affect the size of the table?

15/23

Font issues

1. Is the use of capital letters in the headings needed? Shall it be small caps instead of regular capital letters?

- Contrast "SKILLED TRADES" to "Skilled Trades".

2. Shall we use "PERCENT" or just "%" ?

How will these two issues affect the size of the table?

Space issues

Which is better?

Professional and white-collar occupations	%	Skilled trades and blue-collar occupations	%
University professors	93		

Professional and white-collar occupations	%	Skilled trades and blue-collar occupations	%
University professors	93		

Professional and white-collar occupations	%	Skilled trades and blue-collar occupations	%
University professors	93		

Yet a better table

Professional and white-collar occupations	%	Skilled trades and blue-collar occupations	%
University professors	93		
Mathematicians	91		
Physicists	89		
Biologists	89		
Chemists	86		
School superintendents	85		
Firm lawyers	85		
Lawyers	83		
Journalists	82		
Solo lawyers	75	Skilled printers	52
White-collar workers	43	Paper workers	42
		Skilled steelworkers	41
		Skilled auto workers	41
		Textile workers	31
		Blue-collar workers	24
		Unskilled steelworkers	21
		Unskilled auto workers	16

Best so far

Professional and white-collar occupations	%	Skilled trades and blue-collar occupations	%
University professors	93		
Mathematicians	91		
Physicists	89		
Biologists	89		
Chemists	86		
School superintendents	85		
Firm lawyers	85		
Lawyers	83		
Journalists	82		
Solo lawyers	75	Skilled printers	52
White-collar workers	43	Paper workers	42
		Skilled steelworkers	41
		Skilled auto workers	41
		Textile workers	31
		Blue-collar workers	24
		Unskilled steelworkers	21
		Unskilled auto workers	16

Why are we looking at two different columns?

Professional and white-collar occupations	%	Skilled trades and blue-collar occupations	%
University professors	93		
⋮	⋮	Skilled printers	52

Professional and white-collar occupations	%	Skilled trades and blue-collar occupations
University professors	93	
⋮	⋮	Skilled printers
	52	

Using one column will

- give the feeling of the same scale and
- increase the data-ink ratio.

20/23

A pictorial view?

Can you make this data into a

- pie chart,
- x-y graph, or
- bar graph?

Can we use colors (white versus blue or something else, why)?

- What is the background color?
- Is it viewed on screen or printed?
- Will it be printed in color?
- Shall we have a screen version and a print version?

22/23

Professional and white-collar occupations	%	Skilled trades and blue-collar occupations
University professors	93	
Mathematicians	91	
Physicists	89	
Biologists	89	
Chemists	86	
School superintendents	85	
Firm lawyers	85	
Lawyers	83	
Journalists	82	
Solo lawyers	75	
	52	Skilled printers
White-collar workers	43	
	42	Paper workers
	41	Skilled steelworkers
	41	Skilled auto workers
	31	Textile workers
	24	Blue-collar workers
	21	Unskilled steelworkers
	16	Unskilled auto workers

21/23

You can do better

- Above all else show the data *visually*.
- Maximize the data-ink ratio.
- Revise and edit.

23/23

Technical English, Lecture 11: Who are YOU?

Hossam A. H. Fahmy

We want to know more about you and hence we will speak about

1. CVs,
2. cover letters, and
3. statements of purpose.

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1/8

CVs

Which one shall I choose?

There are at least four different ways to describe your life:

Chronological: The chronological resume is organized by job titles in order.
Which order?

Functional: The functional resume arranges the employment history into sections related to specific skills and accomplishments.

Curriculum Vitae: The 'CV' is a detailed, lengthy, and structured listing of education, publications, projects, awards, and work history. *How long should it be?*

Electronic resume: The electronic resume is a resume (chronological or functional) formatted to ease its reading, indexing, and searching automatically. Some companies use optical scanning systems.

Think about your goal and about your audience.

Chronological: Do you have a solid and *continuous* experience?

Functional: Can you "make sense" of your abilities and describe them despite the unclear (or lack of) job titles in your past?

Curriculum Vitae: Are you applying for an educational or a research position?

Electronic resume: Are you applying for a large company?

To include or not?

Shall you include the following information?

- Age.
- Ethnic identity.
- Political affiliation.
- Religious preference.
- Hobbies.
- Marital status.
- Place of birth.
- Photographs.
- Height, weight, health, . . .

4/8

Who needs a cover letter?

Everyone who sends out a resume does!

- *It must be tailored to the specific circumstances when you send your resume.*
- It introduces your resume and encourages the reader to continue.
- It gives you a chance to emphasize your talents.

6/8

Good to remember

Your resume should

- have a footer such as *CV of yourname, p. 1 of 2.*
- be printed on one side only of the paper.
- use enough variations in the fonts and sizes to look nice but
– *stay professional and avoid too many changes.*
- use a plain background.
- include enough space!

5/8

Good to remember

A cover letter

- must have correct spelling (not even a single mistake).
- must have grammatically correct sentences (not even a single mistake).
- must be addressed correctly.
- must sound as if you wrote it “naturally” (not copied from someone else).
- must show that you know about the company’s business.
- must relate to the requirements of the company.

7/8

What is the SOP?

As its name implies, it should state your purpose, i.e. it should *clearly* indicate your *intention for the future*.

1. Your history belongs in the CV not in the SOP.
2. *Outline* your goals and relate it to the department's research.
3. Clarify how your specific background helps you to achieve those goals.
4. Why is this department the best for you?
5. Why are you among the best students for the department?

Technical English, Lecture 12: Research funding

Hossam A. H. Fahmy

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Research funding

In most countries, the government funds the majority of basic research.

- In the USA, the largest funding agencies are the National Science Foundation (NSF), the National Institute of Health (NIH), and the Defense Agency (DARPA).
- In Europe, the largest granting program in the European Union is the Framework Program (currently FP7).
- The same applies in Japan, Canada, China, India, . . .

The private industry funds around 40% of the total (basic and applied) published research results.

A well established university has a good balance of three income sources:

1. fees from students to offset the daily running costs,
2. a large endowment fund whose dividend provides a stable income over the years,
3. and a flow of continuous donations to fill the gaps between the income from the endowment's dividend and the demand of the research program.

If possible, a good part of the donations should go to increase the size of the endowment.

1/12

No gold from the skies!

The sky does not rain gold nor silver! You must look for the sources whether they are governmental, international, or from the local industry. The plan is simple

1. Define your project.
2. Identify the funding sources.
3. Understand and follow the guidelines of *the call for proposals*.
4. Arrange with your collaborators.
5. Submit the proposal together with your CV, application form, and any supporting documents.

Will I really get the money?

- Most probably, you will not get the *grant* in your first attempt!
- You will learn over time how to secure large funds.
- Collaboration with experienced senior researchers helps.
- The “supporting documents” include a summary of your successfully completed work for previous research grants.
- Your ability to secure funds is a factor in your future promotions.

4/12

Marketing

- All the departments and schools within a university should work harmoniously and tell the same “story” to reinforce the brand name of the university.
- There must be a balance between the actual physical brochures and the virtual electronic web-based material.
- The investments in such branding must be for the long term. It does not pay-off immediately.
- The participation of each individual in the promotion of the “product” with its unique price and place in a persistent and patient manner to all people is the key.

participation, promotion, product, price, place, persistent, patient, and people.

6/12

Anything else?

The story does not end when you get the funds. Money can bring more money!

- Carry out your research and manage the funds correctly.
- Submit the required regular reports.
- Publish your research.
- Keep an eye on follow-up calls.

⇒ Learn how to market your ‘products’!

5/12

Define your project

Remember that your goal must clearly indicate *who* is doing *what exactly* (in a clearly measurable way) *when* and under *which conditions*.

- Do you have a clear, concise, and testable hypothesis?
- Can you design and conduct specific experiments to test it?

Draft a general outline of your proposal and check it against the recent research work in your area.

7/12

What are the funding sources?

- The Internet is your friend.
- Network with your colleagues.
- Think beyond your box. Interdisciplinary work can be funded by multiple sources.
- Study previous proposals (both successful and unsuccessful).
- Are you willing to align your purposes to those of the granting agencies?

Can we really get funding from outside Egypt? Why?

8/12

Elements of a Good Research Proposal

1. Statement of the problem.
2. Literature review.
3. Conceptual framework (preliminary study).
4. Hypotheses or research questions.
5. Methodology.
6. Task structure (scope of work).
7. Management plan.
8. Staff and institutional qualifications.
9. *Budget.*

Write correctly!

10/12

How is it evaluated?

There are three main issues.

Scientific excellence: where they ask

- does the research confirm an existing hypothesis or does it go beyond the state of the art?
- are the aims logical?
- is the proposed methodology effective?

Implementation: which relates to

- the appropriateness of the management structure,
- the qualifications of the investigators (experience, competence) and the consortium in general (balance, complementarity).
- the allocation and justification of the budget.

Impact: which looks at the results, their dissemination, and their uses.

9/12

Administrative issues

- Get all the necessary authorizations and official signatures.
- Make sure that the documents adhere to the formatting specifications of the granting agency and that they are complete.
- Make sure that the documents arrive on time.

11/12

International resources

In Europe, FP7 runs from 2007 to 2013. The total budget is 53 272 million Euros.

- Egypt signed a scientific agreement in 2006 with the EU that enables us to apply to more programs under FP7.
- See (<http://cordis.europa.eu/fp7/>) for FP7 in general and (<http://cordis.europa.eu/fp7/ict/>) for ICT.

Check also (<http://www.rdi-eg.net/>) and (<http://www.astf.net/>).

Technical English, Lecture 13: Writing a paper and a thesis

Hossam A. H. Fahmy

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1/12

Do I have what I need?

To conduct research a student must

- have a good command of the language used in the field (English, Mathematics, Terminology);
- have a strong background and review most of the relevant literature (long and short documents serve different purposes);
- follow a logical way of thinking based on proofs and sound debates seldom on conjectures or unfounded speech and definitely not on fallacious sophistry; and
- present the matter objectively.

Objectivity does not erase the student's personality. The environment in which a student lives and his or her own way of thinking affect, at least, the choice of the topic and the approach to solve it.

2/12

The output of a researcher is recognized in two major ways

- a working prototype that may lead to a real product later and
- descriptions of the research steps undertaken.

In some fields, the basic research does not lead directly to a prototype. It is only after the accumulation of several years of research that a working system is produced.

Useful terminology

A theorem is a major result, one of the main goals of the work. Use this term sparingly.

A proposition is a minor yet interesting result with relative importance.

A corollary is a minor result with less importance and it is derived with little proof from a theorem.

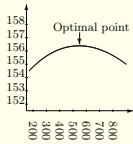
A lemma is a simple subsidiary statement that is stated and proved before being used to prove a theorem.

3/12

Data objectivity

The results of a simulation or an experimental work is often presented as a graph. Be honest while drawing.

- Do not fit the data to your preconceived arguments. You should rather explain your findings and why they might be deviating from your expectations.
- Do not over-glorify your findings. Will this result appear so "optimal" if both axes start at zero with the same scale?



4/12

Paper and thesis: differences

Due to their purposes, they differ at least in their

- length,
- amount of details provided, and
- focus.

The thesis may have an acknowledgment section while the paper may have a number of distinguishing keywords.

6/12

Paper and thesis: common traits

A research paper and a research thesis share many things in their structure.

1. Introduction.
2. Literature survey.
3. Problem details.
4. Proposed solutions.
5. Verification of these proposals (simulations and experiments).
6. Comparative study of the results in light of previous methods.
7. Conclusions, recommendations, and a summary of contributions.
8. Future work.
9. References.
10. Appendices.

5/12

What do the readers expect?

There are a few questions that a reader should be able to answer.

- What is the research question?
- Is it a worthy problem?
- Is the answer provided in the document adequate?
- Is it an adequate contribution (according to the level of the document)?

7/12

Getting started

A simple yet very useful way to write your thesis is to

- make short summaries of all the previous research work *while you are in the “reading phase”*, then
- prepare a general outline of your work,
- add section and subsection titles,
- write the main points that you will discuss in each subsection, and
- review that outline while filling more details over time.

8/12

Revisions

- Re-visions are meant to be yet another iteration through the text.
- They are more effective when you have distanced yourself from that piece of text for some time. You come back with a fresh eye.
- Revisions are not just proofreading. They are supposed to enhance the presentation of the arguments and to strengthen any weaknesses or correct any mistakes (in the language or in the thoughts).

10/12

Time-line

It takes *longer* than what you expect to finish writing a *good* paper or a thesis. When you write

- you formalize your ideas and you discover weaknesses or mistakes in some arguments;
- you present the document to others (professors or reviewers) and they tell you about many shortcomings; and
- you may find out that you have a problem in conveying your ideas clearly which leads you to multiple revisions.

9/12

Beyond the text

- Produce high quality graphics. Keep the original drawings and not just the output format.
- Use tools that generate vector graphics and not bitmaps as much as possible.
- Choose the thickness of the lines in anticipation of any size scaling that might occur while printing.
- Use colors with caution. You might opt to have two versions of your figures.
- Use distinguishable symbols in your legends and legible fonts for your labels.
- Do not compress the files of your illustrations with a lossy compression technique.

11/12

Conclusions

- Start early.
- Make short summaries of what you read.
- Document your research steps.
- Use good tools.

Technical English, Lecture 14: Oral presentations

Hossam A. H. Fahmy

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Tools

In addition to the tongue, we often use one or more *aids*:

- a black or green board with chalk,
- a white board with marker pens,
- a flip chart,
- transparencies,
- handout materials,
- photos,
- an audio or video recording, or
- a computer program.

We deliver our scientific ideas orally

- in lectures;
- in group meetings with research colleagues;
- at conferences
 - full papers or
 - posters;
- to funding “partners”
 - venture capitalists,
 - company managers, or
 - proposal evaluators;or
- to examiners (thesis).

Each type has its appropriate length and level of formality.

1/9

Good to remember

- The presentation is the content of what you deliver not the aid that you are using.
- With all of these aids remember to use your own *body language* according to the prevalent customs.
- Be prepared for different cases (some aids may not be available).
- Unite with the audience.

Preparation

It takes time to prepare a good presentation.

- Consider your audience.
 - How do they relate to you: students, colleagues, examiners, ...?
 - How much do they know about the subject?
- Think about the general framework: introduce, explain, and conclude.
- Get the abstract ideas down to earth. Use real examples and even stories if this is possible.
- Prepare the visual aids.
- Practice! Get help from friends. Record yourself and review.

4/9

Time management

Watch the time. It is great if your presentation takes the exact time neither longer nor shorter. However, flexibility is a virtue.

- Allow several minutes per slide and measure your pace during practice.
- Switching activities (to and from videos or live simulations) takes time. Plan for that time and do not leave your audience waiting.
- Plan for a slightly shorter presentation than the time allotted.
- While speaking, if you have extra time compensate by expanding the discussion of some issues.

6/9

Visual aids

An image is worth a 1000 words but poor quality renders it almost useless!

Each “slide” in a computer presentation should be connected to the previous and following slides. It resembles a paragraph in an article.

Use artistic effects wisely, you should present scientific materials not prove that you are a great film director!

- Use flying objects and sounds when appropriate.
- Avoid extra colors and fonts.

5/9

Watch your language

It helps to understand your vocal capabilities.

- Attempt to change your tone. Provide a *live* presentation.
- Use the appropriate vocabulary for the occasion.
- Pronunciation is usually an issue for non-native speakers.
- Do you mumble?
- Do you drop the last part of your speech?

Practice before the presentation and just be yourself while delivering.

7/9

Delivery

After a good preparation

be confident: the audience knows less than you do about your own work,

deliver directly and avoid reading from your aids,

maintain eye contact: shying away from the audience is not helpful (but remember cultural norms),

involve the audience as much as possible considering the number of people, and

don't "preach" but rather convince the audience.

8/9

Anything else?

Once the presentation ends, the real work begins!

- Answer questions.
- Gather feedback.
- Provide your contact information.
- Initiate conversations after the session.
- Note all the important ideas to implement them once you are back in your office.

In short, think of ways to improve your work given the feedback and to integrate it with other people's work.

9/9

Technical English, Lecture 15: Interviews

Hossam A. H. Fahmy

Interviews are a comprehensive example of what we studied.

- You read a job description.
- You write a cover letter and a resume.
- You maintain a (two way) conversation with the interviewer.

What are the types of interviews?

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1/10

Levels

In many cases you will pass by various filters.

1. The administrative assistants in the company read the application and classify it. They may exchange some emails with you and make a decision.
2. There could be a phone interview.
3. The technical interview tests your abilities.
4. There is sometimes a second interview with the managers where you *negotiate*.

Remember that it is an interview not an interrogation!

2/10

Objectives

Regardless of the type of the interview you want to

1. meet the job requirements,
2. communicate clearly,
3. build rapport, and
4. gather feedback information.

3/10

Meet the job requirements

You should

- prepare yourself emotionally,
- write an inventory of your skills, and
- think about answers to expected questions:
 - Can you tell me about yourself?
 - What are your weaknesses?
 - Don't you think that you are overqualified for this job?

4/10

Communicate clearly

It is a two way communications. Interviewers mention several attitude problems. The interviewee

1. does not ask questions.
2. condemns past employers.
3. is unable to take criticism.
4. has a poor personal appearance.
5. cannot take decision and seems lazy.
6. pretends to know everything.
7. comes late to appointments.
8. is not looking at the interviewer. (avoids eye contact)
9. is unable to express clearly.
10. overemphasizes the issue of money.

6/10

Some answers

Yourself: This should be a short summary (less than two minutes) and probably end it with a question to the interviewer so that you get information about the company as well.

Weakness: “Although I bring many strengths, my performance on . . . is not comparable but I am trying to improve by” You may ask about the company’s policy to promote self-learning by the employees.

Overqualified: “This actually means that I bring new talents to the team and that I am right for you now without any further training. My interest in the position should allow me to use these talents to benefit the company more.” You may ask about the possibility of putting these talents to the service of other employees.

5/10

Over the line

Phone interviews are a bit harder since you cannot use body gestures in either way while communicating. The only thing that you have is your voice. However, prepare yourself and get your papers near you:

- your resume,
- the job posting,
- your research about the company, and
- some opening and closing questions that you want to ask.

7/10

Build a rapport

- Correlate your experience with the benefits of hiring you.
- Take the initiative and make yourself fit. The top finalists are closely matched. It is the rapport that gives you the advantage.

8/10

Thanks are due

Job-seekers must send a thank-you letter right after a job interview. The thank you letter may be one

- that is general.
- that stresses fit.
- that builds on strength.
- that entices the employer.
- that aims at damage control.
- that mentions interview afterthoughts.
- that targets the campus recruiter.

http://www.quintcareers.com/sample_thank-you_letters.html

10/10

Gather information

Instead of playing darts blindfolded try to get answers.

- What are the measures of success in the company?
- What are the top three priorities the company wants to accomplish?
- “Given my qualifications, what are your concerns?”

Remember that you are in a *negotiation*. You are “selling” your time and getting money. As much as possible try to delay the discussion of the salary till you have the upper hand!

9/10

Technical English, Lecture 16: Study abroad

Hossam A. H. Fahmy

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Study abroad: host country side

Some countries work actively to lure international students

- to acquire a larger geopolitical influence,
- to achieve more prestige, and
- to get a net inflow of intelligent people.

Some also do it to get money! ⇒ the reputation might suffer.

Students attend foreign universities for various reasons.

North America and Europe: Students travel to experience a different culture.

Other parts: Students travel to

- access better education,
- improve their socio-economic status,
- build a network of acquaintances,
- find employment after their studies, or
- enrich their personal experience.

1/16

Country essentials

For the country, the essential attributes include:

- the rule of law,
- the civilized social interactions of the locals,
- the respect for individual rights,
- a modern infrastructure,
- a strong education system,
- and government oversight of education.

Country expectations

The students expect:

- a stable economy,
- an affordable cost of living,
- some stability in the student fees,
- an opportunity to work after graduation,
- a good amount of tolerance for diversity,
- a simple visa process,
- and a simple procedure for the rest of the family to visit the student.

4/16

University essentials

The essential attributes include:

- an accredited degree,
- a recognition of the previous degrees,
- clear rules,
- a reputable “brand” name,
- and a familiar (possibly single) language of instruction.

6/16

Country preferences

To excel, the countries provide:

- quality assurance measures for their educational system,
- opportunities to migrate,
- allowances for extended visits by the family or even permanent residency,
- tourists' attractions,
- availability of other citizens from the original country,
- a good amount of wealth that translates to opportunities for the students to eventually become rich if they work hard,
- a good history and reputation,
- political alliances with the home country,
- and a complete society (not just the education system) using a familiar language.

5/16

University expectations

The expected ones are:

- modern learning styles,
- high quality facilities,
- truth in advertising the university,
- and good support services.

7/16

University preferences

The students are further looking for:

- a quality experience,
- a rigorous curriculum,
- flexible study modes,
- scholarship support,
- strong alumni associations,
- allowances for students mobility (even study abroad in yet a different place during their study at that university),
- a good (in the eyes of the student) history, reputation, age, wealth, and size.

8/16

Application process

Many of the students at Cairo University plan very late for their studies.

If you intend to begin your PhD in September of year 'X' then a good starting point would be January of year 'X-1'.

- Start to seek information about the study programs and think about TOEFL and GRE exams.
- Depending on your level you may need to take courses, read about the exams, and make some sample tests for yourself.

10/16

Scholarships

- Most of the universities see a strong need for scholarships for both the local and international students.
- The cost of graduate studies is quite high and usually beyond the abilities of individual students and their immediate families.

Universities however, show a large variation in the allocation policy.

- Some require the student to attend the university for a short period first after which they are assessed and might be granted a full scholarship.
- Other places give the students some assistance upon their arrival and re-evaluate on a yearly base.

9/16

Summer and Autumn months

May or June of year 'X-1': Ask your friends studying abroad about their universities and the cities where they are living.

July or August: Download the application materials from the websites of the various universities. Pass the required tests (TOEFL, GRE, IELTS)

September to November: Fill the applications, get your recommendation letters, and finish any examination requirements you did not fulfill yet.

Start of December: This is a good date to mail the applications since the deadline of the majority of the universities is around January (of year 'X').

11/16

January and February: Speak to professors either directly or through your recommenders.

March and April: Get the replies and act upon them.

May to July: Apply for the visa, reserve housing, buy your tickets, and finish any remaining issues.

12/16

Which universities?

You need to consider your personal priorities:

- Are the universities working in the subject you have in mind?
- Do you have relatives or friends in some location so that you prefer to be with them?
- Do you have any medical problems that make your choices limited?
- What are your actual abilities and desires? (highly ranked versus small universities)
- Would you like to immigrate or stay for a while (2–3 years) before coming back to Egypt? Why in either case?
- Would you like to live in a large city or in a small country town? (Consider your spouse.)

14/16

In general, there are several components in an application. The most common are:

1. your detailed (with the grades) B.Sc. certificate,
2. your standardized test scores (TOEFL, GRE, IELTS),
3. your recommendation letters,
4. your statement of purpose,
5. your CV,
6. your application forms, and
7. your application fees.

In addition to all of that you must write a good cover letter to accompany the application.

13/16

Funding

Usually three kinds of support are available.

Fellowship: This is the best. Study and get paid for it!

Research assistance (RA): Second best choice. You are required to assist the faculty in some research projects as a part time job beside your study and you are paid for your work.

Teaching assistance (TA): The problem with being a TA is that you prepare and study courses to teach which may be totally different from what you are doing in your PhD. *This is good for those who want to become professors.*

15/16

The world is open

- North America has been the favorite destination.
- Europe usually comes second. In some fields, Europe is better!
- Japan, Australia, China, and Singapore are rising. *The future is in Asia!*