Summary

- Abstract (5)
- Int. (+R.work) (4)
- Methods (1)
- Results (2)
- Discussion (3)

1:1

* Proof-reading: read down → up!

* Precision = lack of ambiguity

* Clarity always wins!

[Subject] (*) [verb] [object]

(*) ≤ 7 words

Linking sentences

[old new] [o w1] [o w1]

S1 S2 S3

* the ~~red & white~~ ball
* the red balls and the white balls

* Use the same words (terms)

* Linking ideas

- using "sign-posting" (see the list)

* Hyphenation

- create compound nouns & adjectives

* Use: Academic phrasebank (website)

* Use: more loose sentences than periodic ones

main idea @ the beginning

@ end

* more nouns / less verbs

* more Subordination / less coordination

Subordination: joining clauses with: while, subsequently, because, ...

coordination: with: and, but

* avoid ~~don't~~ → do not ✓ contractions

* use third person: he, she, they, ...

* rarely use first person: I, we

* never use: you!

* limit use: personal pronouns: it, them

* better: this, these

* avoid: there are a lot of

* use: obtain / yield / ...

* avoid: enormous impact (has emotional connection)

* use: significant influence

* Prefer single-word verbs

* avoid: look into

* use: investingate

* Qualify generalizations with:

probably, seems, in most cases, might be.

* 1 paragraph ⟺ 1 idea

usually ≤ 2/3 page

→ Constructing a paragraph:

- Topic: (keywords)
  - → Main statement
    - summary
    - outline

} → generate text

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* check if a short paragraph belongs to a large one (incomplete)

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* words with 2 meanings:

	temporal	logical connectors (try to use their alternatives)
As	✓	✓ because
Since	✓	✓ because
while	✓	✓ whereas, although, though

~~* HEAD~~

* HEDGING

* legitimate
* but used only when absolutely necessary
* Avoid: triple hedge!

- idea
- speculation
- possibility

- probably
- possibly
- seemingly
- presumably
- apparently

- appear
- suggest
- seem
- may be
- postulate
- speculate

Tenses

* Simple Present

- describes general truth (still valid)
- describes previous work

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* Simple Past

- describes actions completed in the past
- " your current work

In CS publications, R.work = separate sec

- Abs. } + R.work → mostly S. Present (may be ended with S.Past: what I did in this work)
- Int. }
- Methods } mostly simple past
- Results }
- Discussion } mixture

Fig x shows that there was ...

Connecting ideas

Transitional Words and Expressions

(Sign posting)

Transitional words provide directional clues for the reader. They show the relationship between sentences in a paragraph. For example, the word furthermore says, "Wait! I have still more to say on the subject." So the reader holds the previously read sentences in mind while reading the next few sentences. This is a list of transitional words and expressions.

INTENTION OR RELATIONSHIP	TRANSITIONAL WORDS AND EXPRESSIONS
Amplification	**For example, in other words, that is**
Cause and effect	**Accordingly, because, consequently, for this reason, hence, since, thus, therefore, if... then**
Concession	**Accepting the data, granted that, of course**
Contrast or change	**In another sense, but, conversely, despite, however, nevertheless, on the contrary, on the other hand, still, though, yet, whereas**
No change	**Similarly, moreover, also, too, in addition, likewise**
Emphasis	**Add to this, besides, in addition to this, even more, to repeat, above all, indeed, more important**
Equal value	**At the same time, likewise, similarly**
Increasing quantity or addition	**Also, besides, furthermore, in addition, moreover, too**
Order	**First, finally, last, next, second, then**
Summary	**For these reasons, in brief, in conclusion, to sum up**
Time	**Then, since then, after this, thereafter, at last, at length, from now on, afterwards, before, formerly, later, meanwhile, now, presently, previously, subsequently, ultimately**

http://www.columbia.edu/cu/ssw/write/handouts/trans.html (9.10.2010)

Jana Kaiser B.Sc. Hons
Trainer for Academic Writing
kaiser@academic-texts.de

The Abstract

The abstract of your article permits potential readers to get a quick overview of your study and to decide whether they wish to read the article itself.

Titles and abstracts are also indexed and compiled in reference works and computerized databases. Therefore, title and abstract should accurately reflect the content of the article and include key words that will ensure their retrieval from a database.

Title: It should be fully explanatory when standing alone and identify the theoretical issues or the variables under investigation. You will not be able to mention all the features of your study in the title (or even in the abstract), so you must decide which are most important.
Title: 10 – 12 words; **Abstract:** 120/200/250 words (depends on the journal)

The Abstract follows the structure:

problem statement: what problem are you going to solve?
motivation / relevance: why is it important to solve this problem?
approach/method: how did you go about solving the problem?
results: what is your solution to the problem?
conclusions: what are the implications of your solution?

Writing a good abstract

A good abstract contains the elements of a complete paper. Generally, citations are not used. Writing an abstract requires a lot of concentration - it's the most difficult part of most papers or theses to write, because you must economize your words and go straight to the heart of the matter.

- The cardinal rule is: **BE CONCISE**. Short declarative sentences work best. Wordy abstracts should be avoided: every word and phrase should convey some central meaning. Avoid generalities and vagueness. Provide information-dense results. You can almost always make any abstract better by going back through it and carefully editing out the fluff.

  In some cases (but not all), it may be appropriate to offer some indication of where the work is going.

Adapted from:
http://academic.reed.edu/writing/student_resources.html
http://academic.reed.edu/writing/tutor_resources.html
http://academic.reed.edu/writing/faculty_resources.html

see also: American Psychological Association. (2001). *Publication manual of the American Psychological Association (5th ed.) Washington*, DC

The Introduction

The introduction invites readers to join the author on a journey of discovery. Readers decide very quickly whether they should spend their valuable time travelling with the author, so they have to be convinced that there is something of personal value to them in the publication.

The introduction has three important functions:

1. It creates a common basis of understanding between reader and author

> *"The investigation of environmental threats has improved general understanding of many chemical processes, such as the formation of acid rain and the build up of carbon dioxide, thus making it possible to understand better their eventual effects on the biosphere."*

2. It destabilizes the common ground by pointing to an unsolved problem. The problem may be new to the reader or it may be an unsolved problem in the field

> *"**But** recently the chemical processes that have been thinning the ozone layer have been found to be less well understood than once thought. Labelling hydrofluorocarbons as the chief cause now appears incorrect."*

3. It promises a solution that is the main point (claim) of the paper

> ***"In this report, we describe a hitherto unexpected chemical bonding between XY . . ."***

Remember:

A good introduction:

- ✓ addresses a broad readership
- ✓ is complete and independent of the paper's title or subsequent contents
- ✓ avoids telling readers the obvious *("The thinning of the ozone layer is a major problem today.")*
- ✓ activates readers' interest in your approach, point of view, results, ...
- ✓ motivates readers to continue reading ("hook")

Booth, Wayne C.; Colomb, Gregory G. and Williams, Joseph M.: The Craft of Research. Chicago and London, 2003, p. 109-160 (modified)
Raimes, Ann; Keys for Writers, A Brief Handbook, Boston, 1999, p. 29f.

THE INTRODUCTION

1	ESTABLISH THE IMPORTANCE OF YOUR FIELD *PROVIDE BACKGROUND FACTS/INFORMATION (research)* DEFINE TERMINOLOGY (e.g. in title, key words) PRESENT THE PROBLEM AREA/CURRENT RESEARCH FOCUS
2	PREVIOUS AND/OR CURRENT RESEARCH AND CONTRIBUTIONS (LITERATURE REVIEW) → in computer science articles → usually a separate section
3	LOCATE A GAP IN THE RESEARCH DESCRIBE THE PROBLEM YOU WILL ADDRESS *PRESENT A PREDICTION TO BE TESTED*
4	MENTION THE MAIN RESULT/*DESCRIBE THE PRESENT PAPER*

THE DISCUSSION

1	*REVISIT PREVIOUS SECTIONS* SUMMARIZE/REVISIT GENERAL OR KEY RESULTS
2	MAP PRESENT RESULTS TO PREVIOUS RESEARCH
3	DESCRIBE ACHIEVEMENT/CONTRIBUTION MADE BY YOUR RESEARCH *DEVELOP THE IMPLICATIONS*
4	LIMITATIONS OF YOUR RESEARCH/INTERPRETATIONS OUTLINE CURRENT AND FUTURE WORK *APPLICATIONS*

TEXT IN ITALICS: optional sections; refer to publisher's guidelines

From: Hilary Glasman-Deal: *Science Research Writing for Non-Native Speakers of English*, Imperial College Press, 2010; p. 24, 179-180 (modified)

Fuzzy methods

The Methods Section

usually use more passive form (because subject is known)

The Methods section must satisfy a basic requirement of scientific research by making the research process transparent and allowing others to repeat the work and obtain the same results.

Irrespective of the research field, the Methods section should answer the following questions:

- How did you reach your conclusions?
- Which data/sources did you use?
- How/Where were the data obtained? How reliable are they? What are possible sources of error? Can the original (raw) data be accessed?
- How did you evaluate the data?
- Are your readers familiar with the methods you used?
- Why did you use these methods and not others? (Methodology; not always relevant)

Remember:

A good Methods section:

- ✓ describes all the procedures accurately and completely
- ✓ uses specialist terminology consistently
- ✓ is understandable for a specialist readership

Swales, John M. und Feak, Christine: Academic Writing for Graduate Students. Essential Tasks and Skills, 1994, Ann Arbor: The University Press of Michigan, p. 159-167

The Results Section

Your results are your reason for publishing—they drive your paper.
The readership is usually narrow and is often made up of specialists who read very critically.
Many journals combine the results and the discussion sections.

It is important to:

1. Present only the most significant results that are directly related to your research question.

   Many journals offer online repositories for the "less spectacular" results which nevertheless may be of interest to a restricted circle of readers.

2. Use high quality graphical representations.

   Readers expect to see results summarized as tables, graphs, diagrams, etc. Don't overload graphics with "effects" that do not contribute to understanding the significance of what you want to say. Label graphics accurately and correctly.

3. Tell your readers what you want them to notice and why it is important.

   Describe the results as specifically as possible with exact numbers, descriptions, etc. Readers should be able to extract the significant trends from the graphics and then find further details in the text. Avoid direct repetition of information about graphics in the text.

Remember:

A good Results section:

- ✓ addresses a specialist readership
- ✓ reduces complexity as far as possible without sacrificing precision and accuracy
- ✓ focuses on the most important aspects of your work

based on material from:
M. Cargill & P. O'Connor: Writing Scientific Research Articles Strategies and Steps. Chichester 2009, p. 21-33. Hilary Glasman-Deal: Science Research Writing for Non-Native Speakers of English London 2010 p. 91-153

The final Discussion

The Discussion section establishes the author's reputation as a scientist.
Readers have to be convinced by the strength of the arguments!
Many readers read this section first.

The discussion must:

1. Clearly state the main point of your work

➔ Repeat the answer to the research question first presented at the end of the Introduction.

"The chemical bond between X and Y... influences the ozone layer twice as strongly as the emission of carbon dioxide in that it ..."

2. Discuss the results in the light of the current research situation

➔ Which new contribution/s do/does the work make to the field? Have you closed the knowledge gap? (Maybe: which practical consequences does the work have?)

"These results completely change common assumptions about the formation of the ozone hole ...
The results make it necessary to develop new approaches about how to protect the environment ..."

3. Point to new research questions/directions

➔ What still needs to be done to solve the problem completely? Which data need to be gathered to further validate the results?

"It still is unclear how the effects of XY on the ozone layer can be reduced, because ..."

Remember:

A good Discussion should

- ✓ "mirror" the structure of the introduction
- ✓ be understandable for a broad readership
- ✓ critically evaluate the strengths/weaknesses of your work

Booth, Wayne C.; Colomb, Gregory G. and Williams, Joseph M.: The Craft of Research. Chicago and London, 2003, p. 109-160.
Raimes, Ann; Keys for Writers, A Brief Handbook, Boston, 1999, p. 29f.