

A recipe for producing effective academic writing

This course is based on a simple assumption: writers want an easy-to-use “recipe” to help them write readable and academically credible work. They do not want to read through a thick textbook or just follow a language course. They want to write as quickly as possible and get on with their research. Responses from researchers have supported this assumption.

The recipe presents three levels of structure that form the basis of logically organizing academic ideas.

- Overall structure: what goes where
- The structure of paragraphs: presenting and supporting academic messages
- The structure of sentences; the basic building blocks that tie the whole thing together.

Authors can use the overall structure presented below as a template to organize their ideas and messages. During the course, we will go into how to build sentences and paragraphs which clearly present these messages in each section.

The structure

The Introduction

The purpose of the Introduction is to present the point of the research and lead the reader to the hypothesis or it may be a literature review, but always in the light of a research question. It is NOT a comprehensive “textbook” discussion of the topic; it focuses on a clearly identified aim. It is structured as follows.

- A BIG problem that the author is concerned with. This goes right at the top of the Introduction.
- A strategy for helping to solve that problem.
- The “knowns” and one or more “unknowns” we need to explore to take a step toward solving the problem.
- A research question/hypothesis whose answer is a step toward solving the problem. This is a statement in the present tense questioning/hypothesizing on how the world is. This is often the most difficult statement for researchers to formulate. And, yet, it is crucial to presenting credible academic work.

The Methods

The purpose of this section is to clarify how the research question/hypothesis was answered. It is written in the past tense and reports what was done. The Methods section varies, depending on the type of study but, in general, it is structured as follows:

- What was studied
- How factual data/observations were measured/collected
- How the data were analyzed.

The Results

The purpose of this section is to present the relationships between the variables that were found. It is in the past tense and it is structured as follows:

- The factual data/observations
- The relationships found between them.

The Discussion

The purpose of this section is to answer the research question and support that answer. It is NOT a summary of the results, but the author's interpretation of the results. It is structured as follows.

- The author's answer to the research question/hypothesis goes right at the top of the Discussion section.

This is the author's present tense interpretation of how the world is.

It is stated using the same keywords as were used in the Introduction to present the question/hypothesis and contains a direct and unambiguous answer.

- How the factual results found in the study help to support that answer.
- How the results of other researchers help to support that answer.
- How theoretical considerations help to support that answer.
- The possible limitations of that answer.

Contents of a Discussion section

1. Answer the research question(s)
2. Support answers with your results & others (literature)
3. Explanation
4. Defend your answer (pros & cons)
5. Unexpected outcome(s) & explanation
6. Indicate newness/importance of answer if necessary
7. Explain discrepancies with published results
8. State and explain limitations/weaknesses of the study
9. Discuss validity of any assumptions methods are based on

10. Implications, applications, speculations

*Background information, including references to the **Results** section, may be included anywhere in the **Discussion** section, provided it is relevant to the argument being made.*

The Conclusion

A separate Conclusion section presents the value of the research and the next steps toward solving the major problem stated in the Introduction. It is NOT a summary of the study (that is the purpose of the Abstract). It is structured as follows.

- How the study helps to solve the problem stated at the beginning of the Introduction. This represents the value of your research. The study could have practical or theoretical consequences; it could also have further research consequences, which is often the case with basic research. This section links directly back to the major problem that's dealt with in the paper and it uses the same keywords that were used to state the problem.
- A next logical step toward solving the big problem. Big problems are seldom solved with a single study; but the author, as an expert in the field, tells readers what is still needed to solve the problem. This could be a new research question that needs to be answered, or a more robust study to reduce the limitations of the current answer.

Note that two "threads" tie this structure together:

- The point of the research:
 - the big problem
 - the strategy for helping to solve it and
 - the value of the research in taking a step toward solving it.
- The research question/hypothesis that is addressed and answered – the basis of all credible academic work.

Some common problems – checklist

Checklist of common problems

Problem	Comment
Too much description, not enough analysis	A common complaint of lecturers is that students in general tend to describe rather than analyse in their writing. It is usually not enough simply to outline what you have read. You need to evaluate the ideas, compare them with those of other writers, and examine issues and perspectives critically.
Poor structure	<p>What helps:</p> <ul style="list-style-type: none">linking wordstransition sentencescareful paragraphing'signpost' expressionssub-headingsconsistency between introductions and conclusions
Wrong register (language too informal)	<p>Do not use contractions. Use academic written, not spoken English. Avoid slang or colloquial language and idiom.</p>
Ineffective paraphrasing	Avoid 'patchwork paraphrasing'.
Too many quotes	Whilst it is important to refer to other writers in academic writing, it is also important not to rely too heavily on their words. Try to paraphrase much more than you quote.
Poor choice of quotes	Only use a direct quote if it is particularly well-expressed or the ideas are particularly significant. Appropriate quotes used sparingly can greatly

	improve your writing, but using too many quotes, particularly if they are not well chosen, will detract from your writing.
Insufficient or inadequate sources	Quantity of your references Quality of your references
Incorrect referencing	Ensure you understand the style required for the particular assignment.
Plagiarism	Failure to acknowledge the source of all ideas is a serious matter. Copying directly from another text without acknowledgement is even more serious.

Checklist

- Do I still like the beginning?

Ideas evolve as you write – sometimes it's best to write the Introduction last.

- Can I write more clearly, concisely and simply?

Replace complex jargon, pompous with plain language. Read the text from the reader's point of view. Does it need to be so complex?

- Do I make sense?

Check for contradictions, ambiguity and poor logic.

- Do my numbers add up?

Check all figures and statistics carefully, or get them checked.

- Do my sentences hang together?

Write smooth, dynamic paragraphs (not all the same length).

- Do my verbs pull their weight?

Use strong verbs, keep them close to their subjects and remove unnecessary passives.

- Do I need every modifier?

Delete non-essential adjectives and adverbs / keep them close to nouns and verbs.

- Have I got rhythm?

Listen to the sound of your writing. It should be easy to read out loud.

- Am I playing in tune?

Listen to the tone. Is it in harmony with your subject and your audience?

- Can I trim?

If in doubt, cut it out. Say things once, not twice or three times.

- Have I made my case?

Step back and assess the power of your arguments. Ask a colleague's opinion.

- How's my grammar and spelling?

Don't forget to run your spelling checker

proficient writers:	less experienced writers:
have a purpose internal to the text, and keep it in mind	lack a clear purpose and/or are distracted by details while writing
look for structure and theme	allow the ‘need’ to incorporate external sources to structure their writing
check sources to verify the accuracy of their memory of the meaning of a text	check sources to make sure they’ve ‘covered’ concepts
read critically	read passively
record both the content of readings and personal reactions/thoughts inspired by the readings; may revise or look for themes and overall structures in their notes before using them, so that parts of the notes may be expanded to become parts of a paper	take notes on the content of readings, and reread these as preparation for writing,
spend relatively more time with argument	spend relatively more time with definition
use information from readings to provide context for their own argument	use information from readings to provide content for definitions
document sources in detail	are uncertain about which sources should be documented
have authority: feel ‘in control’ of the background reading they have done – able to draw appropriate information from memory and using these to contextualize or strengthen the authors’ points	feel dominated by the background readings because these are not easily accessed in memory, assigning authority to the readings but not to the self – either avoiding or over-relying on references to others’ work; citing too seldom and copying too much
use their conscious processing capacity for focus, style, etc.; it is possible that relying on purpose, theme and structure frees processing capacity to generate ideas not specifically present in background links	use their conscious processing capacity for reading, rereading and trying to recall unsorted and unclustered information from background texts, leaving little capacity free to generate original ideas. Having found usable information in readings, this becomes the focus of the writer’s text, with the writer responding to the source text.
<p>This summarizes the findings and notes some of the implications of a study on the use of source texts: Cherry Campbell (1987) <i>Writing With Others’ Words: The Use of Information from a Background Reading Text in the Writing of Native and Non-Native University Composition Students</i>. unpublished PhD dissertation, University of California, Los Angeles CA, USA.</p>	

WRITING OFFICIALESE

The following paraphrases a lesson that Dr. Gerald Grow gave his graduate students several years ago on how NOT to write:

1. Start with a simple statement: We quit. Why? Nobody knows how to program the computer.
1) Due to insufficient funds
2. Change to passive voice, and dilute responsibility: It was decided to quit.
3. Expand with terminology that doesn't add meaning: It was decided to terminate.
4. Build a noun string: It was decided to terminate project processes.
5. Add a qualifier of uncertain relation to the original statement: On account of the status of the computer, it was decided to terminate project processes.
6. Add noun strings and more terminology to the qualifier: On account of the status of the computer program assessment planning development effort, it was decided to terminate project processes.
7. Separate related words: On account of the status of the computer program assessment planning development effort, it was decided to terminate until a later date project processes.
8. Equivocate: On account of the uncertain status of the computer program assessment planning development effort, it was proposed and tentatively accepted to terminate until a later date project processes.
9. Obfuscate: Due to uncertainties in the status of the computer program assessment planning development effort, proposals were carefully considered and tentatively adopted to suspend temporarily until a later date project processes.
10. Cover your tracks, and make yourself look good: Due to the unavoidable uncertainties in the status of the computer program assessment planning development effort, a number of contingency proposals were carefully considered and one was tentatively adopted to suspend on a temporary basis until a later date those project processes deemed unessential to the expeditious fulfillment of contract requirements.

The correct use of tenses in scientific writing

(freely adapted from: *How to Write & Publish a Scientific Paper* by Robert A. Day, Cambridge University Press (211 pages, 1989, paperback ISBN 0 521 36760 3).

- **Previously published work that is generally applicable:** USE PRESENT TENSE

"Streptomycin inhibits the growth of *M. tuberculosis*"

- **Your own and other specific studies:** USE THE PAST TENSE

If you determined that the optimal growth temperature for *Streptomyces everycolor* was 37°C., write: "*S. everycolor* grew best at 37°C."

If you are citing previous work (including your own), write (for example):
"*S. everycolor* grows best at 37°C."

You normally find yourself moving between past and present tenses. Most of the Abstract is in the past tense (your own results). Likewise, Materials & Methods and Results (what you did, what you found). However, most of the Introduction and much of the Discussion should be in the present tense, because of references to previously established knowledge.

EXAMPLE

Title: The effect of streptomycin on *Streptomyces everycolor*

Abstract: "The effect of streptomycin on *S. everycolor* grown in various media was tested. Growth of *S. everycolor*, measured in terms of optical density, was inhibited in all media tested. Inhibition was most pronounced at high pH levels."

Introduction: "Streptomycin is an antibiotic produced by *Streptomyces griseus* (13). This antibiotic inhibits the growth of certain strains of *Streptomyces* (7, 14, 17). The effect of streptomycin on *S. everycolor* is reported in this paper."

Materials & Methods: "The effect of streptomycin was tested against *S. everycolor* grown on Trypticase soy agar (BBL) and several other media (Table 1). Various growth temperatures and pH levels were employed. Growth was measured in terms of optical density (Klett units)."

Results: "Growth of *S. everycolor* was inhibited by streptomycin at all concentrations tested (Table 2) and at all pH levels (Table 3)."

Maximum inhibition occurred at pH 8.2; inhibition was slight below pH 7."

Discussion: "*S. everycolor* was most susceptible to streptomycin at pH 8.2, whereas *S. nicolor* is most susceptible at pH 7.6 (13). Various other *Streptomyces* species are susceptible to streptomycin at even lower pH levels (6, 9, 17)."

Typical tense variations:

"Significant amounts of type IV procollagen were isolated. These results indicate that type IV procollagen is a major constituent of the Schwann cell ECM."

Guidelines for reviewing storylines

Key element 1

At the beginning of the Introduction

- In the 1st paragraph, is a problem clearly described? Is it understandable to non-specialists? This is, of course, the problem that your research will help to solve.
- Is the strategy to help solve the problem clearly stated? I recommend that you use an "if" sentence such as, "If we can discover/unravel/explain... then we might be able to..."
- Literature review: is what's known and what's unknown clearly described? And, ONLY those known's and unknowns that are relevant to the research question (see key element 2). Be alert for "textbook" information (trying to cover everything) here.

Key element 2

In the last part of the Introduction

- Is a research question (with a question mark) or a hypothesis to be tested clearly stated? In either case measurable or observable variables need to be mentioned, and the relationships between those variables that the research will make clear. Check these variables carefully; are they measurable/observable?
- Watch out for vague relationships such as "...association between ethnic background and integration." Such statements are not specific enough. "Association" is not a specific relationship; it has many definitions/interpretations. And, "ethnic backgrounds" can be defined in many different ways and is therefore not sufficiently specific. The term "integration" is also much too general – how did the author measure it?
- Watch out for statements such as: "The aim of our study was to investigate XXX" Note that "to investigate" is not an adequate academic aim; we investigate to achieve some aim. And that aim should be to answer a research question.

Key element 3

Sometimes a very brief description of methods at the end of the Introduction is useful. This will help readers to understand the complexities of the method used. Furthermore, it allows readers to skip the Methods section and go direct to the Results, Discussion and Conclusion.

- A brief description of how the data were collected.
- A brief description of how the data were assessed. For the storyline this should be very brief with few technical details. It must be understandable by non-specialists.
- The same key terms should be used as were stated in the research question.
- The Methods section should be in the past tense and is often written in the passive form.

Key element 4

This appears in the Results. Before the details are presented, I suggest:

- A brief description of what was found. This will help readers who wish to quickly get the main message of the Results and move on to the Discussion.

- Throughout the Results, the same terms should be used as were stated in the research question, not confusing synonyms.
- Your results: past tense, but references to figures/tables: present tense.

Key element 5

This 1st sentence of the 1st paragraph of the Discussion

- Does the author answer the research question? This should be a present tense statement of the authors' interpretation of the results of their study.
- Note that several research questions may have been stated. In that case, each of them needs to be answered.
- Does this sentence contain exactly the same terms that were used to state the question? I recommend that you paste your question into this section and then turn it into an answer; this ensures that exactly the same keywords are used.
- This sentence should be in the present tense. It is not a summary of results (past tense), but the author's interpretation about how the world "is" as a result of the research.
- The rest of the discussion supports this answer with the authors' own results, relevant results of others, theoretical considerations, etc. Again watch out here for "textbook" information. Don't try to cover everything that's been written in the field.

Key element 6

In the Conclusion, check for the following:

- The value/relevance of the work. Does the author clarify how the work helps to solve the problem mentioned in key element 1? This could be a relevant consequence or an aid to further research, etc. This should relate directly back to the big problem mentioned in key element 1 and, preferably, use exactly the same keywords.
- The next step. Does the author tell us what the next step could be toward solving the big problem? Credible researchers give direction to work in their field.
- Note that the purpose of a Conclusion is not to *summarize or repeat information* in the article. This is a common blunder and often leads to rejection.

Title

- Does the title say something about an important problem or just identify a vague topic?
- Does every word that appears in the title also appear in the article? Watch out for confusing synonyms; this is a common blunder.

Abstract

- The Abstract should briefly present the same information as in the 6 key elements. To save space, combine the elements in single sentences, for example, the problem and the research question, the research question and the methods, the answer to the research question and the consequences, etc.
- The Abstract should use exactly the same words that appear in the article. Again, watch out for confusing synonyms.
- Check the purpose of the research: to answer a question and not just "to investigate..." Make sure you have answered the key question about your research: "So what?"

Codes used to review flaws in your writing in the workshop

Well-expressed sections of the text are identified with the code WE.
Sections that have problems – and the type of problem – grammar, style or structure) are indicated in the margin, using the following codes:

Grammar

Ad	wrong choice of Adjective/adverb
Art	wrong use of Article (a[n]/the)
NM	Number Mismatch (e.g. singular subject/plural verb)
Pr	wrong Preposition
Pu	incorrect Punctuation
Sp	incorrect Spelling
VF	wrong Verb Form
Voc	Vocabulary (poor choice of word(s))

Style

Amb	Ambiguous
AN	change Abstract Noun to active verb
Cl	Clarify which noun a pronoun refers to
Ger	German interference
Inf	Too informal
NC	disentangle a complex Noun Cluster
PA	change verb from Passive to Active
Re	Rephrase the underlined text
Red	Redundancy
Si	Simplify the underlined text
SM	unstack a Stacked Modifier
^	something appears to be missing here
WE	Well Expressed
WO	Word Order problem

Structure

A	Argument poorly constructed/unfocused
E	Is there Evidence for your claim?
L	Lack of clear logic
O	Overload: too many ideas crammed in this sentence
P	Paragraph (indent or leave a blank line)
T	Lack of a clear thesis

Please make sure that all drafts are printed with sufficiently wide margins and line spacing for coding, comments and redrafting.

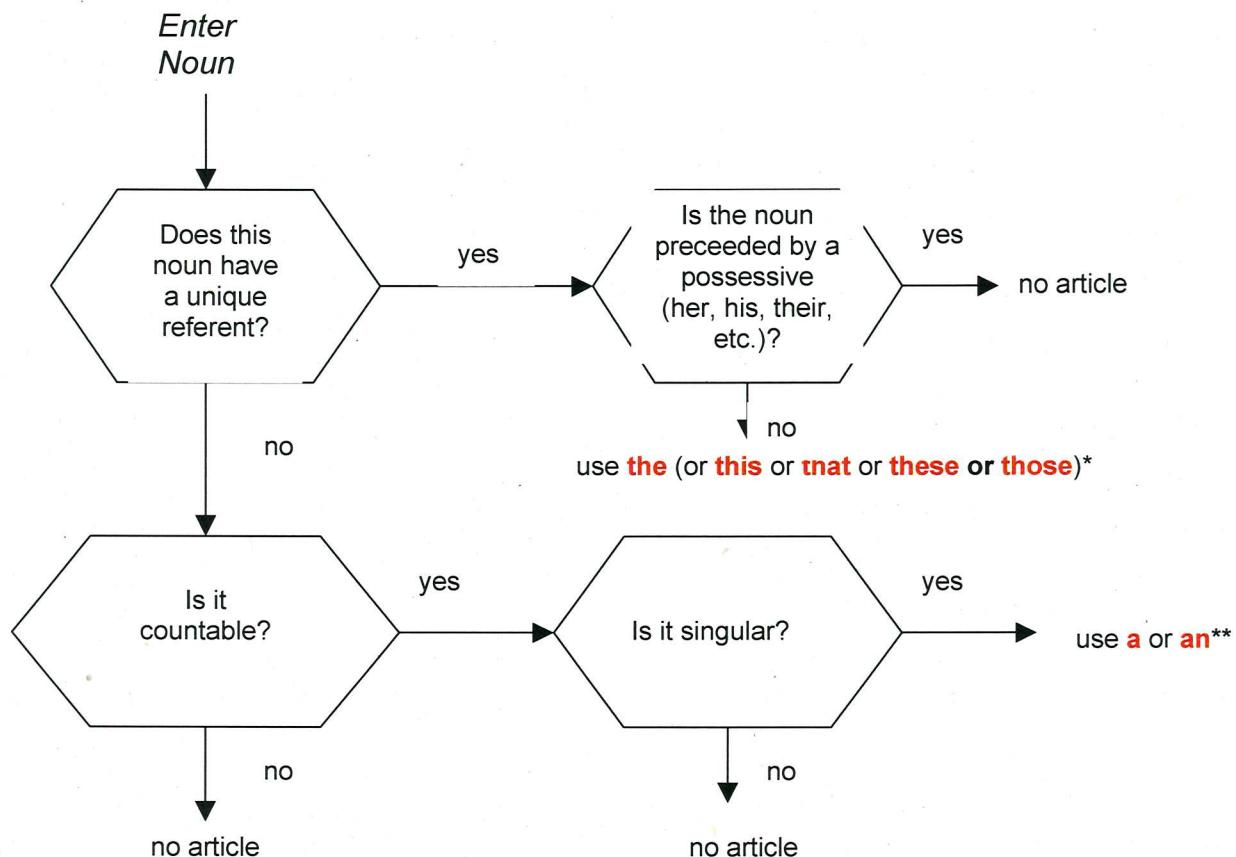
"Final tips"

- 1) Make sure you have a clear thesis. (53)
- 2) "Think of yourself as a prosecuting attorney, think of your essay as a case, and think of your reader as a highly skeptical jury" (53)
- 3) Prove each of your points supporting your overall thesis (53)
- 4) "Signpost your argument every step of the way" (53)
- 5) "*Assert, then support; assert, then support; assert, then support*" (53)
- 6) Paragraphs should be "organized around a single major point" (53)
- 7) Instead of starting each paragraph with a topic sentence, use "*a bridge sentence* whose prime function is to convey the reader over into a new paragraph" (54)

6 "Closers"

- 1) "Get your main point ... in sharp focus"
- 2) "Gratify your reader with at least one new idea"
- 3) "Give your ending emotional impact" (57)

Flow chart for choosing the correct article in English



notes

There are a few exceptions to this chart. Living languages are like that. If you think you might have found one, email me at linda@write-research.com.

* For example: 'This chair' (shows which chair, and this chair is literally or figuratively near me, as are 'these chairs' (plural); the chair (also shows which chair is meant, but the chair may or may not be literally or figuratively near the speaker).

** Use **an** if the noun begins with a vowel sound, and otherwise **a**. This is how you can detect an accent even without hearing the writer speak.

For example: most UK writers: write 'a herb' (and say the h in herb)
 most US writers: write **an** herb (and the h is silent).
 Both are correct.

Examples:

educational system

has a unique referent, so:
 the continuing depletion of fossil fuels

atomic energy

no unique referent, and not countable, so:
 no article needed

important part of these decisions

no unique referent, countable (one 'part'), singular, so:
 use a or an (depending on whether noun starts with a vowel sound*) (in this case, an)

steelmakers

no unique referent
 is countable, plural, so:
 no article needed (assuming you mean steelmakers in general, and not some subset of them)

Chapter 3

Producing scientific information

So far, we've discussed some of the problems with the current system of science. In this part of the book we provide practical tips 'n tricks on how to produce high-quality papers. The first thing you need to realize is that it's all about having a good idea and a lot of discipline.

Papers are born from ideas, i.e. when an author intuitively senses an important discovery. In principle, every idea/discovery can potentially lead to publication (as illustrated in Fig. 1.10). But not all drafts are publishable. So you should first ask yourselves whether your work is truly novel and whether it has a large enough potential audience. In many cases, you may need to face the fact that your ideas are simply not good enough for a top journal (or perhaps not even good enough for any journal). Such work can still be disseminated, but in a different format. Once you are sure, however, that you want to produce a research article, you need to be systematic. Producing scientific publications generally takes place in five main stages:

- *Design and preparation of the scientific publication* (experimental design and agreement among co-authors)
- *Actual research work* (data collection, data analysis, scientific writing)
- *Product filtering* i.e. peer-review, line editing and production of graphics
- *Publication and dissemination*
- *Post-production* (mainly product marketing).

In the following sections we describe these stages. We first focus on preparation and data collection. In chapter 4 (page 71) we focus on the techniques and skills needed to write papers, and in chapter 5 (page 113) we provide some pre-submission checklists. We highlight both threats and opportunities and illustrate these with some examples.

3.1 Design and preparation

"I believe in intuition and inspiration. Imagination is more important than knowledge. For knowledge is limited, whereas imagination embraces the entire world, stimulating progress, giving birth to evolution. It is, strictly speaking, a real factor in scientific research."¹

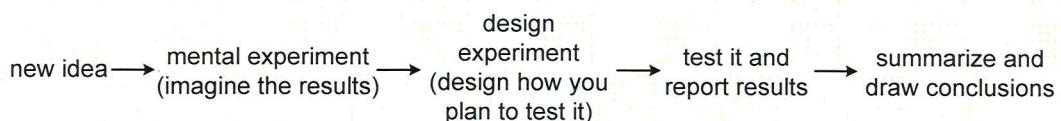
People generate ideas in different ways. One natural way to come up with ideas is:

- *Gather raw material — specific & general — and combine it kaleidoscopically.*
- *Digest this material mentally.*
- *Drop the problem and do something completely different.*
- *Experience the Eureka moment, when the creative idea appears as if out of nowhere.*
- *Expose the idea to criticism i.e. test it against the real world.*

The creation of ideas is usually a non-linear process. It often happens as the result of complex mental processes that are still not fully understood. Nevertheless, we can create an environment that's conducive to generating ideas. Life on earth developed in physical and chemical conditions over 2 billion years ago. Simple molecules just needed enough energy, water, chemicals and radiation; the rest they figured out themselves. In the same way if we expose a human brain to inspiring ideas and provide materials/tools that it can play with, it is very likely that these will lead to new ideas and hence to new creations. For practical tips on how to improve your creativity by improving your working conditions, see section 3.6 (page 66) on coping with stress.

For Prof. McBratney, University of Sydney, the typical cycle of producing a scientific information package is:

1. *Generate an important idea*
2. *Develop it (design the experiment)*
3. *Think how to test it (choose the right statistical method)*
4. *Collect data (measure)*
5. *Test it*
6. *Publish it*
7. *Move on to the next idea...*



Also for CREEDY (2008), the pre-writing stage is crucial to improving efficiency. He offers a number of practical tips:

¹ Albert Einstein in "Cosmic Religion: With Other Opinions and Aphorisms" (1931), p. 97.

- *Attach a time schedule to your writing plan* (aim to finish with several weeks to spare before the deadline).
- *Start writing immediately* (write as you go along).
- *Establish good working habits and use your time efficiently: work on a bibliography or on tidying up graphics and supplementary materials when you can't work on the main parts of your paper.*
- *Arrange regular meetings, be flexible and revise your plan when necessary.*

This last tip needs to be emphasized. Science requires flexible agendas; you can't make progress with strict routines. A *live* agenda that can be iteratively adjusted based on initial results and difficulties typically leads to faster progress, because science can be extremely unpredictable (CRUMP, 2002). Problem solving should dictate the way we design science.

It's also important to emphasize that many researchers (especially beginners) put themselves under unnecessary stress by seriously under-estimating the time/effort needed to complete project phases. CREEDY (2008, p.22) thinks that we should be much more pessimistic: "*when planning research projects, produce a generous estimate, fully allowing for the fact that everything takes longer — then double the time and add some more for good measure.*"

Wikihow (a manual that anyone can edit) lists the following key tips on "*How to Conduct Academic Research*"², i.e. how to write an essay or review paper on a research topic:

- (a) *Design your research:* Determine your research topic/question. Understand the difference between primary (original) and secondary (review) research. Determine your scope and time line. Write a research question, which reflects a real problem that needs to be solved. Ideally it should contain variables or other relationships that can be tested.
- (b) *Read the relevant literature:* Learn how to find useful sources. Collect some possible sources and begin reading in detail. Find a method to take notes on what you read. Continue to consider new sources.
- (c) *Evaluate:* Evaluate the sources you use. Keep your research question in mind. Your source material must help you establish your thesis. Be selective. Don't be tempted to write an exhaustive WIKIPEDIA-style review of the topic.
- (d) *Formulate the thesis:* Write your tentative **thesis**³. Think of how to express your point in a single, complete sentence. Make sure this sentence states your opinion.
- (e) *Begin writing:* Begin writing your first draft. First sketch a rough outline, which explains the problem you are tackling, a research question (or series of questions) designed to solve that problem, answers to these questions, the implications of those answers, and possible next steps for research.
- (f) *Revise it:* Continue writing your first draft with quotes (or paraphrases) from relevant sources, and then revise it.

² <http://www.wikihow.com/Conduct-Academic-Research>

³ This is a single statement of your position on the research question.

- (g) *Finalize it:* Prepare the final draft. Strictly follow the format of the target journal, by checking its handbook or a general stylebook (e.g. TURABIAN (2007)). This includes: title page, page setup and numeration, citations, bibliography style, visuals, sections and titles, etc.

For ROSSITER (2009), reporting on research follows Caesar's proverb *veni, vidi, vici*, or in other words: I came and applied some methods to attack the problem (*veni*), I saw the following results (*vidi*) and I can now draw some significant conclusions (*vici*). One victory leads to another battle, of course.

For Alex McBratney⁴, the keys to success in scientific work are:

- *engage in deep reflection*
- *talk to people*
- *use mind-altering devices*
- *no Ipod!*⁵

Assuming that you have an idea (and frankly, it's not important how you got it as long as it's your own and it's a good one), this needs to be converted into a clear, concise proposal.

3.2 The one-page concept paper

The first tip for producing relevant, credible, readable scientific information is to carefully plan the whole thing right from the start. Pitch your idea as if you were trying to convince a journal editor of the value of your research. We call this a one-page concept paper. As we mentioned earlier, editors take just a few minutes to decide whether a paper that's been submitted should go to peer review or be rejected. This paper should include the topic, the authors and their roles and responsibilities, your main ideas and assumptions, a broad picture of the experimental setup and a time-line with phases and deliverables. Once the main thrust of your paper has been established, it's much easier to organize the production of the paper. Think of it as a small project.

These are some issues that you should definitively consider when preparing a one-page concept paper:

- ✓ What do you want to 'sell' with this paper? What is the problem that you're addressing and what is the key research question that will lead you to a solution? The research question (and its answer) is the basis of all credible science. Blaise Pascal: "*One cannot really be considered as having a research topic until it can be expressed in the form of a succinct question.*"

⁴ Keynote talk at the Pedometrics 2007 conference.

⁵ Hopefully Apple will not take this remark as anti-marketing. The fact is that many modern entertainment devices tend to capture a lot of our attention, with the risk that we lose focus.

- ✓ Is the topic really⁶ novel?
- ✓ Who is it intended for: a specialist or broad audience?
- ✓ What will be its strong aspects?
- ✓ How are you going to prove your hypothesis and is this proof going to be convincing?
- ✓ Will you be able to organize the experiment and data processing (resources, support)?
- ✓ Who will be first, second author, etc., and what will be their responsibilities?
- ✓ In which form do you want to publish it?

The most important step in starting a paper is to produce a one-page concept paper. This should include: an important issue (the topic), a clear problem statement, the authors, their roles and responsibilities, your main ideas and assumptions, a broad picture of the experimental setup, and a time-line with deliverables.

Although it is a good idea to select a target journal early on, at this stage you should first focus on the quality of your research and not think too much about the impact factor of the journal or the number of publications you can produce from your results. Keep in mind that a good paper is one that makes an impact, i.e. one that will be widely read and used by many people to further their research.

As we explained in the first chapter, research publications typically focus on one (or more) of the following:

I. New discoveries (about us and our environment), which could include (CREEDY, 2008):

- New empirical regularities
- A new theory, and/or
- Improved understanding of or fresh insights into a problem.

II. New technological developments

III. Solving open mysteries

IV. Systematization and synthesis of existing knowledge (overview and/or review).

Try to distinguish in which category your paper falls. Perhaps it's all four. In which case it would be rather complex to write such an article. Maybe your work should be split into several articles?

⁶ Often we are sure that the topic we are working on is completely novel. We then find out that it has already been discussed and described, sometimes as long as 50 years ago.

3.3 Review your results and repeat the experiment

“I only trust those statistics that I’ve falsified myself.”⁷.

Now you have your master plan, you can proceed with the collection of data, i.e. carry out experiments. The initial results confirm your expectations and you are excited about the whole thing. You would like to publish it as soon as possible. At this stage, it might be wise to review your results and even repeat the experiment several times. Sleep on it. As John Tukey correctly puts it: “*the combination of some data and an aching desire for an answer does not ensure that a reasonable answer can be extracted from a given body of data.*”

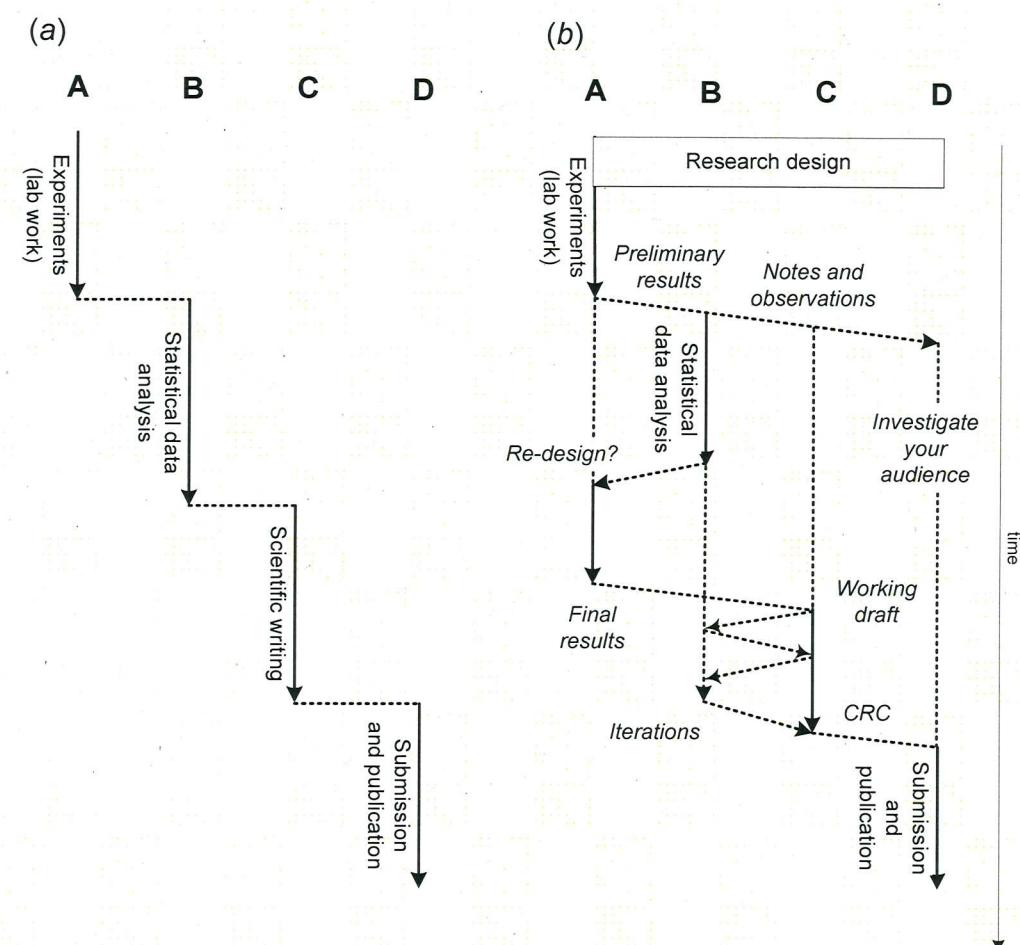


Fig. 3.1 Scientific paper production phases — lab work (A), analysis (B), writing (C) and submission (D): (a) the ‘linear’ approach (which almost never works), and (b) the iterative, parallel approach. In practice, evolution of scientific information up to Camera Ready Copy (CRC) is, in fact, highly non-linear with many iterations, resets and re-designs.

⁷ Winston Churchill

The worst-case scenario is that you get your paper published and then find out that some aspects or elements were incorrect or wrongly interpreted. Once people find out, you get a bad reputation and you will have a much lower chance of publishing similar papers in future. So, although you scored a publication, you've damaged your career. Prof. McBratney suggests: "*spend more time thinking how to test a model before it's too late.*"

The most critical parts of your article are likely to be the evidence and interpretation. Spend time thinking how to make your arguments more convincing. Reconsider your results and, if possible, repeat the experiment several times.

This brings us to another big problem of modern science — impatience. Authors are often impatient to publish, so they hide unexpected findings or things that they cannot explain. Sometimes, research projects can lead to what is called '*negative*' results — proving that the proposed methodological or technological improvement does not fit expectations or does not help solve some practical problem. CREEDY (2008) points out that even such disappointing results can be useful and should certainly not be dismissed. In fact, some of the best articles in the history of science focused on something that DID NOT WORK. Are you aware that the most significant discoveries⁸ in the world happened unexpectedly, through serendipity or even error? Really important ideas only become clear in retrospect. Great ideas might be emerging right now, but we don't know it. In other words, if you are too sure about the results you expect and if there's too much routine in your work, do not expect to discover something great (see also the rules of science on page 5). For the same reason, always be very flexible and ready to adjust the key topic of your article, depending on what you and your co-authors think is the most significant discovery.

3.4 Investigate your audience

Once you've done several tests and got the same results repeatedly, you can be confident about your discoveries. However, you should not immediately complete the paper. Now is a good moment to investigate your audience, i.e. those who will read and evaluate your work: focus on the audience and readability of the paper. This is nicely emphasized by GOPEN and SWAN (1990): "*An academic paper cannot exist without the interpretation of each reader. If the reader is to understand the writer, the writer has to know what the reader needs. We can't be sure that even a single sentence we write will mean the same to every*

⁸ For example, electricity, telephone, Röntgen rays, cosmic background radiation, etc. See a book on this topic by NEWMAN (2000).

reader; all we can do is increase the chances that most readers will interpret our writing the way we intended.”

The best way to find out how potential reviewers will receive your paper is to communicate some preliminary results at a research conference or seminar. Communicating your preliminary results and key ideas to potential reviewers will give you insight into what they see as strong points and what they criticize. You can get such feedback in few hours (if you send a paper to a journal, you will have to wait for months). By giving seminars you can also practice putting your thoughts into words and then into arguments.

If you do not get any questions about your work, this is a bad sign. Either your colleagues are not interested in the topic, or they have difficulties understanding it, or you have not emphasized the key points in your presentation. Also, if you offer too many ideas/results (even good ones), this can tire an audience and they will not be receptive to your work. The same will probably happen with the paper. Sometimes, throwing things out of the paper really helps — *less is more!* Many investigations⁹ have shown that shorter, more focused papers generally have a higher impact. One of the reasons why short is better is because the authors have had to put more work into compressing their work. As Blaise Pascal once said: “*Je n’ai fait celle-ci plus longue que parce que je n’ai pas eu le loisir de la faire plus courte*” or “*I have made this (letter) longer than usual, only because I have not had the time to make it shorter.*”

Research conferences are also a good place to find out more about the topics that your colleagues are working on. It’s not only important to find out what others think about your ideas, it’s also important to know what other people are working on at the moment. The best scenario is that your topic (research problem) is discussed heatedly by many other scientists, i.e. it’s ‘hot’. This is definitively a sign that you should start preparing the first draft of your paper.

3.5 Ten simple rules

“*First principles, Clarice. Simplicity. Read Marcus Aurelius. Of each particular thing, ask: what is it, in itself, what is its nature...?*”¹⁰

PLoS has published a collection of *Ten simple rules*¹¹ for various aspects of scientific work. The ten rules for doing best research according to Hamming are (ERREN *et al.*, 2007):

1. *Forget modesty and say to yourself “I want to do something significant.” (Go Big or Go Home)*

⁹ See for example the work of HARTEMINK (2002) about publishing in soil science.

¹⁰ The first simplicity principle of Hannibal Lecter that helped agent Clarice Starling solve the case of a serial killer. From “*The Silence of the Lambs*” book by Thomas Harris.

¹¹ <http://collections.plos.org/ploscombiol/tensimplerules.php>

2. *Prepare your mind — luck is a marriage between opportunity and preparation.*
3. *Start publishing young.*
4. *Brains are not enough; you also need courage.*
5. *Make the most of your working conditions — don't blame the tools.*
6. *Work hard and effectively.*
7. *Believe and question your hypothesis at the same time.*
8. *Focus on what is important for society.*
9. *Be committed to your problem.*
10. *Leave your (office) door open — don't get too isolated.*

Likewise, BOURNE (2005) compiled ten simple rules for getting published:

1. *Read many papers, and learn from both the good and the bad work of others.*
2. *Learn to be objective (as the journal editors) early. The more objective you can be about your work, the better that work will ultimately become.*
3. *Look at the masthead of the journal in which you plan to publish. Good editors and reviewers will be objective about your work.*
4. *Learn to write well in the English language.*
5. *Learn to live with rejection.*
6. *Do not ignore the essential ingredients of good science/reporting: novelty, comprehensive coverage of the literature, good data, good analysis and thought-provoking discussion, good organization of the document, appropriate use of tables and figures, right length, writing to intended audience.*
7. *Start writing the paper the day you have the idea of what questions to pursue.*
8. *Become a reviewer early in your career.*
9. *Decide early on where to try to publish your paper.*
10. *Quality is EVERYTHING. Better publish one paper in a quality journal than multiple papers in lesser journals.*

Such rules of thumb won't necessarily work for every field of research or for every individual, but they are based on decades of experience from a variety of research fields and cultures, so are certainly worth considering. Although it might seem simplistic to reduce everything to simple rules, these are essentially sound.

So, the first question you need to answer is: how ambitious are you? Obviously, if you want to do top-class work, you will need to work hard: six of the ten rules refer to preparation, commitment, and focus. On the other hand, there's no need to be obsessed about your work. In fact, the best ideas come from a healthy body and soul and not from obsession and isolation. Participation in regular sporting activities or other non-intellectual pursuits provides a valuable diversion from work (CREEDY, 2008). For examples, sports such as jogging, swimming or cycling are excellent activities to get fit while allowing your unconscious mind to continue processing intellectual problems (see section 3.1 on generating ideas).

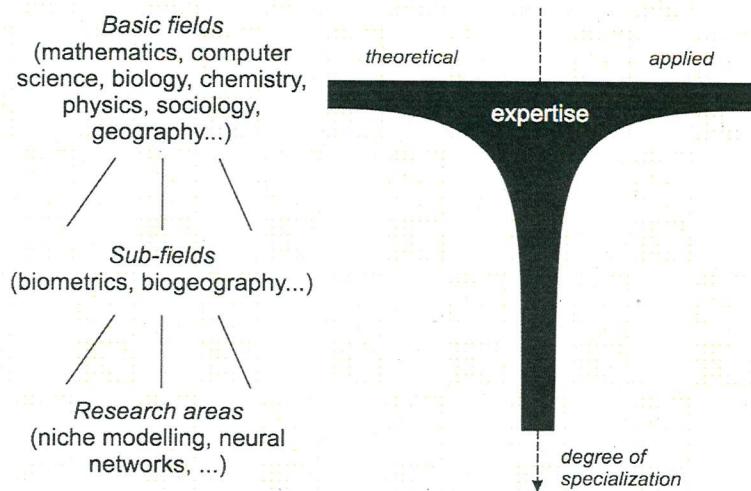


Fig. 3.2 The concept of T-shaped skills: a modern researcher is expected to be a hybrid between a generalist and a specialist, with equal ability in the applied and theoretical sides of knowledge.

Group sports are also useful for developing social skills and strengthening your stamina and crisis management skills. Another useful way to relax intellectually and get inspiration is to read popular science books and science articles in the media (as long as these articles are based on systematic research and not speculations). Seminars can also be very inspiring, even when the topics discussed are very different from your own work.

Many sociologists and managers think that intellectual workers with T-shaped competencies are better at coping with real-life problems (see Fig. 3.2). Thus, investing in your general knowledge could be beneficial for your success as a researcher.

Rik Leemans, editor in chief of the journal *Current Opinion in Environmental Sustainability* and author of several influential papers, when asked about the secrets of success for writing winning articles, refers to the following *spices*:

- ✓ *the team*
- ✓ *the guts to be innovative*
- ✓ *effort spent on producing a new tool and/or new large database*
- ✓ *effort spent on promoting it (through workshops and press releases)*.

Note that teams increasingly trump *solo* authors: teams typically produce more frequently cited research than individuals do, and this advantage has been increasing over time¹² (WUCHTY *et al.*, 2007).

¹² In the old days solo authors were more likely to produce exceptionally high-impact research.

Furthermore, for Leemans, the key to success is to produce papers that are winners in at least four categories:

- *it's a story*
- *it's interesting*
- *it's clear (easy to grasp)*
- *it will sell.*

Leemans suggest that, in order to improve readability, authors should always use the language of their target audience and define or '*translate*' unusual terms.

The key to producing highly influential articles is: (1) focus on a topic that is relevant, (2) get the best co-authors on your team, (3) demonstrate your points by using clear examples, (4) package your paper with accompanying materials (posters, software, web-sites, video-demos, promotional materials).

The European Association of Science Editors (EASE) has produced a list of guidelines for writing research articles and other scientific publications¹³, as a result of long discussions on the EASE Forum and during the EASE 2009 conference in Pisa. Here is a summary:

1. *Do not begin drafting the whole paper until you are sure that your findings are reasonably firm and complete*, so that you can draw sensible and reliable conclusions.
2. *Choose the right journal for your manuscript before you start writing.*
3. *Do not submit articles that are not 100% complete.*
4. *Follow the logical macro-structure suggested by the publisher* — information is interpreted more easily if it is placed where readers expect to find it.
5. *Do not include information that is not relevant to your research question(s).*
6. *Do not copy and paste (substantial parts) from previous publications.*
7. *Do not repeat information in the article* (with the exception of the abstract, figure legends and concluding paragraphs).
8. *Reduce the length wherever possible* (delete obvious statements and other redundant fragments).
9. *Replace long scientific terms and expressions with abbreviations.*
10. *Express your doubts if necessary but avoid excessive hedging.*
11. (Unless required otherwise by the editors), *use numerals for all numeric data*, i.e. also for single-digit whole numbers, *except for zero and one* (if without units), and in other cases where misunderstanding is possible. In numbers exceeding 4 digits to the right or left of the decimal point, use thin spaces (not commas) between groups of 3 digits.

¹³ <http://www.ease.org.uk/guidelines/>

12. Clearly distinguish your original data and ideas from those of other people and from your earlier publications.
13. Check that you are using correct scientific terms. Define every uncommon or ambiguous scientific term at first use. Avoid colloquial and idiomatic expressions. If in doubt, replace unfamiliar terms with easily understood terms with a similar meaning.
14. Add the original names of places to lesser known geographic names.
15. Write compact, cohesive and logically organized text. Each paragraph should preferably start with a topic sentence, with the next sentences fully developing the topic.
16. Do not overuse passive constructions. But keep in mind that the subject of the sentence determines whether active or passive voice is required. The most important thing is to make sure that the sentence subject is the same as the sentence topic.
17. Use the past tense when describing how you performed your study and what you found or what other researchers did; use the present tense for general statements and interpretations.
18. Make figures and tables easy to understand without a need for reference to the main body of the article. Omit data that are not informative. In captions or footnotes of figures, define all abbreviations and symbols that are not obvious. Use text tables when presenting a small set of data.
19. Define abbreviations when they first appear in the main body of the text. Avoid abbreviations in the abstract.
20. Do not write about yourself as “the author(s)”, as this is ambiguous. Instead, write “we” or “I”. More and more journals prefer this style.
21. Ask a thoughtful colleague to read the whole text, in order to see if anything is ambiguous or unclear.

These suggestions are based on a range of editorial recommendations for authors and translators of scientific articles. “If authors and translators follow these guidelines before submission, their manuscripts will be more likely to be accepted for publication.” (EASE)

3.6 Coping with stress

“Life is like riding a bicycle. To keep your balance you must keep moving.”¹⁴

At the end of this chapter we feel the need to discuss an issue that is highly relevant to successful production of science: managing stress. Stress is a state of critical mental (emotional) and physical disorder or imbalance that can lead to more serious medical and psychological complications (headaches, anxiety,

¹⁴ Albert Einstein as quoted in Walter Isaacson, “Einstein: His Life and Universe” (2007), p. 367.

sleep disturbances, RSI¹⁵). Stress may be due to a number of causes. In the case of research work, these are (BLOOMFIELD and EL-FAKAHANY, 2008):

- too many parallel tasks
- too much routine work
- tension in your professional network (unclear roles and responsibilities)
- deadlines
- pressure to compete for funding
- pressure to publish.

Each of these causes can be dealt with by adopting a systematic strategy. For example, too many parallel tasks probably means that you have to learn how to drop out of some collaboration, or limit your tasks to an agreed list. To avoid tension in a group it's often a good idea to increase the frequency of meetings and discussion panels. Spend more time communicating and giving each other a chance to meet and debate. Do not avoid confrontation. As with any project, it's better to have a team that communicates honestly than to pretend that problems do not exist. Likewise, do not hide problems that you cannot explain — seek help. Deadlines cannot be avoided, but at least you can prepare yourself psychologically (e.g. if you are a graduate student take a look at Fig. 5.5 to know what to expect). Think of a deadline as like an important game: the further you get in the playoffs, the more serious you need to be. Now imagine a positive outcome (victory). This thought can carry you through the tough times.

You can deal with stress and tension in your professional network by improving your social practice in general. For example, here are some general suggestions on how to improve chemistry with your colleagues:

- try meeting your colleagues in an informal setting (e.g. in so-called “team building” sessions)
- try participating in group sports
- visit other research groups and learn from their experiences
- visit research groups abroad (e.g. on sabbatical) — observe how things are organized and what is better (or worse) compared to your own organization
- attend summer schools or workshops in a less formal setting
- attend conferences that focus on new developments, new techniques and fresh ideas
- attend workshops that stimulate brainstorming and interdisciplinary exercises — “*games are the most elevated form of investigation.*”¹⁶

Socializing in science is good. Creative individuals inspire each other and great ideas come out of interactive brainstorming — these people are often your best co-authors. The problem is to find them.

Many inexperienced researchers work too hard. The number of hours spent working is, in fact, irrelevant. It's the quality of the scientific work that counts

¹⁵ Repetitive Strain Injury — damage to the musculoskeletal and/or nervous system that may be caused by repetitive tasks.

¹⁶ Quote by Albert Einstein.

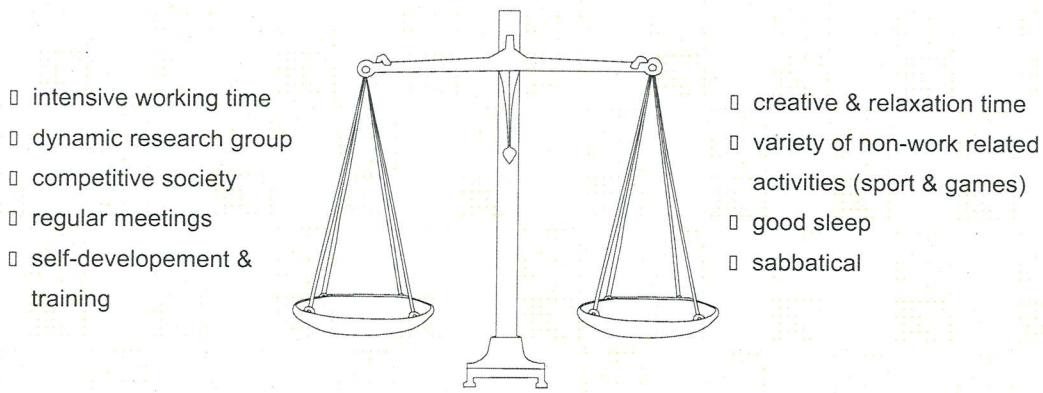


Fig. 3.3 The key to success in academic work is a balanced combination of hard work and creative relaxation time.

(ASCHERON and KICKUTH, 2004). A working environment can play a key role here. If you're not able to work in an environment that allows you to think clearly and, if you don't have information systems that allow you to run analyses, visualize data, and compare your work with that of others, you're unlikely to be able to develop top science even if you are strongly motivated to succeed. Malcolm Gladwell: "*Success is not a random act. It arises out of a predictable and powerful set of circumstances and opportunities.*"

Ultimately, you cannot increase your output simply by extending your working hours. After a point, workaholism and obsession become counterproductive. In fact, you can do damage to yourself and your career if you do not find a good balance between creative, relaxing and working time.

Table 3.1 Leo Esaki's rules of thumb for making a career in science. Adapted from ASCHERON and KICKUTH (2004).

Creative side	Productive side
<ul style="list-style-type: none"> • focus on relevant topics only • be unconventional and eccentric • be stubborn • gain independence (of authorities) • do not overload your mind with too much information • sleep on ideas • count on luck • create creative chaos! 	<ul style="list-style-type: none"> • generate many publications (acquire significant funds) • be systematic and follow conventions • adjust to your research group • listen to advice from your supervisors • memorize important concepts (even computer code) • publish as soon as possible • eliminate random effects • tidy up your desk!

Leo Esaki, the winner of the Nobel Prize in Physics in 1973, suggested a number of practical rules for making a career in science (see Table 3.1). This shows how a researcher has a dual nature — productive and creative — and that

the two are often in conflict. A combination of creative freedom and systematic work is usually the best strategy. The trick is to know in which situations you can improvise and be relaxed, and in which ones you should be painstakingly precise and focused.

The Passive Voice and Topic-Comment Theory

But trying to teach these three as criteria for using the passive would be impractical since no one is going to hold them in mind while composing. Karen Scriven has taken a more productive approach by invoking the “given-new” and “topic-comment” theories of text coherence. She wrote, “Passive sentences have [. . .] [a] vital stylistic justification. Readers expect the information in the subject position to be the topic or theme of the discourse. Without the passive, the writer may have trouble meeting this reader expectation” (92). She didn’t, however, suggest teaching strategies for dealing with this situation.

For those new to such matters as topic-comment ordering within sentences, good discussions can be found in William Vande Kopple, George Dillon (ch. 5), and Quirk, Greenbaum, Leech, and Svartik (ch. 18).

In its simplest manifestations, topic-comment theory says that the head of a sentence(s), usually the noun phrase (NP) but sometimes an introductory modifier such as a prepositional phrase, is its topic and the rest of the sentence, the verb phrase (VP or predicate) is comment on that topic ($S = NP + VP$). While some theorists have argued that the NP usually presents “given” information—that is, information already in our possession—and the VP “new” information, it is not hard to find instances in which such is not the case. Dillon’s view of the function of the NP seems to me more convincing. “We may think of the Topic,” he writes, “as the standpoint that defines the background and the foreground—not the target of attention, but where attention is directed from. We can then think of the linguistic devices for marking and shift-

ing the Topic as devices that orient the reader and thereby direct his attention.” The Topic is “where we stand as we look toward the rest of the sentence” (105). For example, in the sentence “Dillon’s view of the function of the NP seems to me more convincing,” our attention is directed from the phrase *Dillon’s view* to the phrase *seems to me more convincing*. Most commonly the word within the NP that specifies the topic is the subject, although as I mentioned above, it may be a word in an introductory clause or phrase or it may be a modifier of the subject.

This can be seen most easily in a passage in which the author is writing about a single topic and so tends to keep the NPs consistently focused on it. Here is an example from Barbara Tuchman’s great book, *A Distant Mirror*. She is talking about the medieval castle:

One governing concept shaped a castle: not residence, but defense. As fortress, it was an emblem of medieval life as dominating as the cross. In the *Romance of the Rose*, that vast compendium of everything but romance, the castle enclosing the Rose is the central structure [. . .]. In real life, all its arrangements testified to the fact of violence, the expectation of attack [. . .]. The castle’s predecessor, the Roman villa, had been unfortified [. . .]. (5)

Here we can see the role of both subjects and introductory phrases in controlling the focus of the paragraph. The subjects are *concept*, with *castle* as direct object, *it, the castle, its arrangements, and the castle’s predecessor*. The introductory phrases *as fortress, in the “Romance of the Rose,” and in real life* also play an important part as guides to our reading of the paragraph. On the very next page, writing about the French province of Coucy, or Picardy, Tuchman uses as subjects *Coucy, Picardy, its rivers, its fertile soil, clearing, Picardy, and its temper*.

Notice that in the passage about the castle, Tuchman uses what could be seen as a passive voice in her last sentence. She could just as easily have written, "The Romans, however, did not fortify their villas," so why didn't she? The answer lies in the terms "cohesion" and "coherence."

Cohesion and Coherence

Stephen P. Witte and Lester Faigley in "Coherence, Cohesion, and Writing Quality" follow numerous other linguists in defining cohesion as explicit mechanisms in a text that tie its sentences together. "Coherence conditions, on the other hand, allow a text to be understood in a real-world setting" (199). If Tuchman had started her sentence with "The Romans," she would have, at least momentarily, thrown us off by causing us to wonder how the Romans suddenly got into a discussion of the medieval castle. This cohesion problem—nowhere in the preceding sentences have the Romans been mentioned—would have produced a coherence problem—where did they come from? But when she begins with "the castle's predecessor," we are, through an instance of lexical cohesion, comfortable with the new subject being introduced and understand immediately what its purpose is. A passive-voice verb seems a small price to pay.

Experiments with simple texts have shown that scrambling the order of topics from sentence to sentence (producing disorganized texts) or moving topic material into the VP or predicate and comment material into the NP (producing poorly focused texts) significantly degrades the ability of readers to remember the content of texts (see Dillon, ch. 5; and Vande Kopple "Functional"). Perhaps the most interesting thing about these discussions of text coherence and cohesion

among linguists is that the words "active" and "passive" never come up. Why not?

The reason is that, from the point of view of both coherence and cohesion, writers must make their most important decisions before they get to the verb, when they decide what to put in the topic portion of the sentence, which is where the subject is, and, by implication, what they will reserve for the comment part, which is where the verb is. And the nature of the topic, and even more importantly, the nature of the grammatical subject will usually determine whether the verb is active or passive or neither. To illustrate this, here is a short text in which you will find three passives:

In the 1920s and 30s some European military theorists believed that future wars would be won by air power alone. They argued that bombing would destroy cities and drive people mad, and they convinced most airmen of their thesis. In 1941, Germany put this theory into practice when it tried to subdue England from the air, and later in the war, England and the United States tried to do the same to Germany. The air attacks were made by brave and selfless crews, but they were never as effective as had been predicted.

In the first sentence, it seemed to me important to begin with a topic that framed the entire subsequent discussion—"In the 1920s and 30s, some European military theorists." And with "theorists" as subject, an active-voice verb was most likely to follow, since people tend to perform actions. In the noun clause, however, my second framing concept, "future wars," produced a passive. Had I chosen to make "air power" the topic, an active-voice verb would have resulted. The same situation comes up in the last sentence of the passage, where the voice of the verb is determined by whether one uses "air attacks" or "crews" as sub-

ject (and this situation arises yet again in the *where* clause in this sentence). And finally, the passive in the reduced clause at the end of the passage is also determined by the subject; here it is a function of my unwillingness to repeat the word “theorists” in this spot because, by this point, my focus has shifted from what theorists had once believed to be the results of actual attacks. Had I wanted to mention theorists again, an active verb would have resulted. There is no compelling argument for changing any of these passives to actives.

Teaching Sentence Focus

Since every native speaker of English commands the ability to produce either active or passive voice as required, the only reason for teaching the grammar of these voices would seem to be to enable writers to make a conscious choice about which to use. But here we encounter three objections. As the example of Orwell shows, even highly skilled, very experienced writers do not self-monitor for use of the active and passive. How much less likely is it, then, that inexperienced writers would be able to do so even if they knew how? Second, neither voice carries with it any special value anyway, so why would one want to worry about which of them one was using? And finally, the voice we use in a given clause is in any case primarily determined by another factor that does carry with it a value, the value of text cohesion and coherence and, thus, readability. Accordingly, if we teach sentence focus—the desirability of keeping the topic in the subject position in so far as possible—we will accomplish the end of teaching the appropriate uses of active and passive.

Studies of speech and writing have shown that academic writing differs from

dyadic speech in, among other ways, employing nominalizations and abstract subjects in preference to personal and concrete ones, and it is probably inevitable, given the nature of academic work, that this should be so. But this feature results in an increased incidence of passives, for, as Donald C. Freeman has written, “Abstractions have far fewer, if any, opportunities to be agents [while] human beings are the best agents of all” (170).

Inexperienced young writers trying to enter the academic discourse community are thus likely to begin imitating what they see as its characteristics. Mimicking the writing they are exposed to, they will naturally seize upon its most obvious features, one of which is the preference for abstract over concrete or personal sentence subjects. Students in this transitional phrase can readily be taught to follow three easy principles that will help their prose in numerous ways:

- Make what you are talking about the subject of your sentence and don’t worry about repeating it in subsequent sentences. Varying one’s subjects when logic and cohesion call for them to be the same is a very bad idea. If a passage becomes monotonous because of strings of identical subjects, the problem is that the sentences are too short and some need to be joined.
- When possible, prefer a personal subject to an abstract one; for instance, words such as “one” or “the reader” will often serve well when an abstraction is being discussed. In the passage I quoted from Dillon earlier, he used the subject *we* three times when writing about very abstract material.

- Try to remember that actions are performed by humans; think what actions are involved in what you are writing about and try to use as your sentence subjects words referring to the humans performing those actions.

Exercises in employing such principles in revision passages are generally effective in showing students how to avoid the worst excesses caused by trying to produce an academic or pseudo-academic prose.

Reading student texts that seem disjointed or disjunctive, teachers often make the mistake of thinking that what's missing is enough conjuncts—*ands* and *because*s and *therfore*s and the like, explicit cohesive ties. In their study of strong and poor student writing, Witte and Faigley found that while the good writing did feature more cohesive ties, these ties were most often lexical—that is, the kinds of ties that result from key words in the NP part of sentences that make Tuchman's writing effective. But they also found that “there is no evidence to suggest that a large number (or a small number) of cohesive ties of a particular type will positively affect writing quality [. . .] . Just as exclusive focus on syntax and other formal surface features in writing instruction probably will not better the overall quality of college students' writing, neither will a narrow emphasis on cohesion probably produce significantly improved writing” (202).

While I agree that teaching cohesion as we currently do will not help, sentence

focus exercises (which promote lexical cohesion) are helpful. In their simplest form, such exercises involve merely revising a passage for better use of sentence subjects. For example, we would ask students to revise the following passage in order to focus consistently on “the leaders of the American Revolution”:

The leaders of the American Revolution were deeply concerned by many issues that had been controversial in Great Britain before the 1770s. A state-sponsored religion was thought by Adams, Jefferson, and the others to be an intrusion on the right of the individual to his or her own beliefs. The legitimacy of government was believed to be gained from the consent of the governed. Power should not be conferred by one's birth, they felt. And speaking your mind should not result in your getting arrested.

A good revision would look like this:

The leaders of the American Revolution were deeply concerned by many issues that had been controversial in Great Britain before the 1770s. Adams, Jefferson, and the others thought that a state-sponsored religion was an intrusion on the right of the individual to his or her own beliefs. They believed that government gained its legitimacy from the consent of the governed. They did not believe that power should be conferred by one's birth. And they believed that people should not be arrested for speaking their minds.

Addressing the sentence focus/cohesion issue contextually can produce significant improvements in student writing without the teaching of active and passive voices.

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Sentence Focus, Cohesion, and the Active and Passive Voices

Composition instructors should teach sentence focus or choice of subjects to promote cohesion and coherence and help determine active or passive voice.

by William S. Robinson

Introduction

Virtually every composition textbook issues warnings to students about not using the passive voice. In rare instances, a book will suggest that there are legitimate uses of the passive, but seldom indicates what those uses are.

It is hard to understand how the passive fell into ill repute since it is a legitimate and useful part of the language. If many of our textbooks are anything to go by, we English teachers do have an unfortunate habit of giving advice about writing that has no basis in reality, but in the case of the passive, that habit has spread far beyond the classroom. Joseph M. Williams has shown that George Orwell, in his famous essay "Politics and the English Language," "in the very act of criticizing the passive, not only casts his proscription against it in the passive, but almost all the sentences around it as well." And he notes, "I am bemused by the apparent fact that three generations of teachers have used this essay without there arising among us a general wry amusement that Orwell violated his own rules in the act of stating them" (158). That's the trouble with made-up rules—it's hard not to break them.

The Uses of the Passive

It is not hard, however, to spell out what the uses of the passive are. They are three:

1. We use the passive to focus on, to make the subject of the sentence, the word that would be the direct object if the sentence were written in the active voice.

Stephen Crane wrote *The Red Badge of Courage*. (active voice: focuses on the author) *The Red Badge of Courage* was written by Stephen Crane. (passive voice: focuses on the novel)

2. We use the passive when the agent of an action is, in the context, "universal."

The passive is usually employed in three circumstances. (by whom? by anyone)

3. We use the passive when the agent of an action is unknown or unimportant or when trying to express it would involve one in pointless complications.

His trial was held on Monday and he was convicted. (Nothing would, in most cases, be gained by trying to put this sentence into the active with the concomitant need to find agents for the two verbs.)

GENERAL POINTS

allows for ... → *makes it possible to*

amount of → *number of* (if countable)

concerning → *relating to*

decrease → *reduce*

is dependent on → *depends on ...*

different → *various, several, a number of, a range of*

.... **enables** to perform → *makes it possible to perform*

Several theories exist → *There are several theories*

gives → *provides / get* → *acquire / has to be* → *must be*

highly → *strongly depends on*

have to be... → *need to be, should, must*

In the last years → *In recent years / like* → *such as*

in case of fire, press the red button (this is OK) → otherwise use *if*

on a level, but at a scale / the majority of scientists ... → *most* scientists ...

the present study or project → *this study/ project*

people that → *people who ... / possibilities* → *potential*

previous work characterized... → *previous research* has characterized ...

pursue → *explore* the question if → *whether ...*

reach → *achieve / regarding* → *in terms of*

realized (ambiguous) → *carried out* studies / **relations** → *relationships*

respective → *related* issues (X, Y and Z, respectively)

... **showed significantly less error** → *made significantly fewer errors*

In sum ... → *In conclusion ...*

show → *demonstrate / Thereby* → *In this way*

utilize → *use / usage or utilization* → *use*

The **present** study → *This study ...*

In this **work** → *In this study*

This paper **aims at showing** ... → The aim / purpose of *this paper* is to show...

The study **proposes** → In this study we *propose...*

... **is well studied** → *There have been many studies on ...*