Questionnaire
-Please fill out before the lecture-

https://www.wenjuan.com/s/Q73Az2v/

<u>-How to Write a Scientific Paper in English-</u>
<u>(To Publish in SCI Journals!)</u>
Beijing Institute of Technology, June 1st 2016
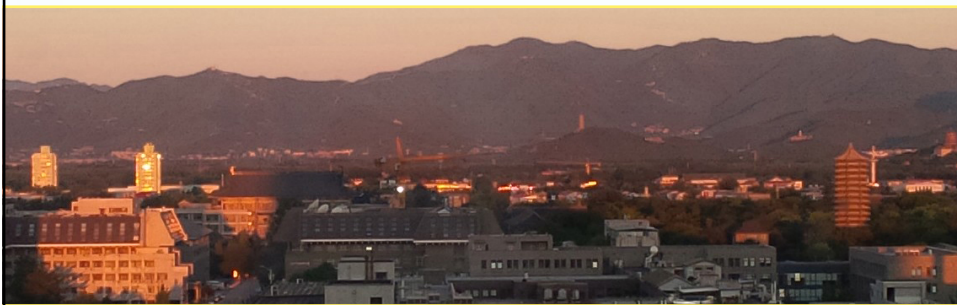
Torsten Juelich & 范逸洲
Peking University, China
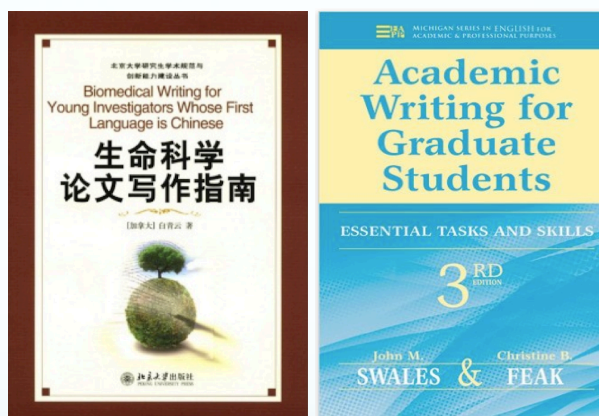
Researcher, Scientific Language Editor, Lecturer

* Australian National University, Canberra
* Chinese Academy of Sciences (Beijing/Lanzhou/Kunming)
* Peking University (Lecturer, CESE)
* University of CAS, Beijing
* Agricultural University, Shenyang

范逸洲
Doctoral Candidate
Peking University (GSE)
Innovative Teaching Methods

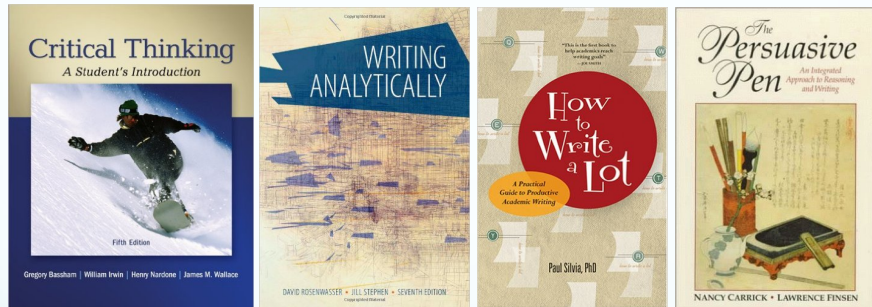
Reading Tips

* Biomedical Writing for Young investigators whose first language is Chinese, (Bruce I.C., Peking University Press, RMB25)
* Academic Writing for Graduate Students (JM Swales and CB Feak; U Michigan)

Reading Tips

* Critical Thinking (G. Bassham et al.; McGraw Hill)
* Writing analytically (D. Rosenwasser & J. Stephen; Thomson/Wadsworth)

Scientific Writing in English-
Why bother?!
-
Why are you here?!

Possible questions **from you**:

Why does it matter whether my paper is full of mistakes, it's the good science that matters, no?!

Should I write my paper first in Chinese, and then translate it into English?

What is the difference between spoken and written English? Why is it important to write differently?

Why do I need to worry about Tenses and Voices?

Any other questions?

Some questions **from us**:

How many of you have already published a paper in an English journal?

How many of you are drafting/writing a paper right now?

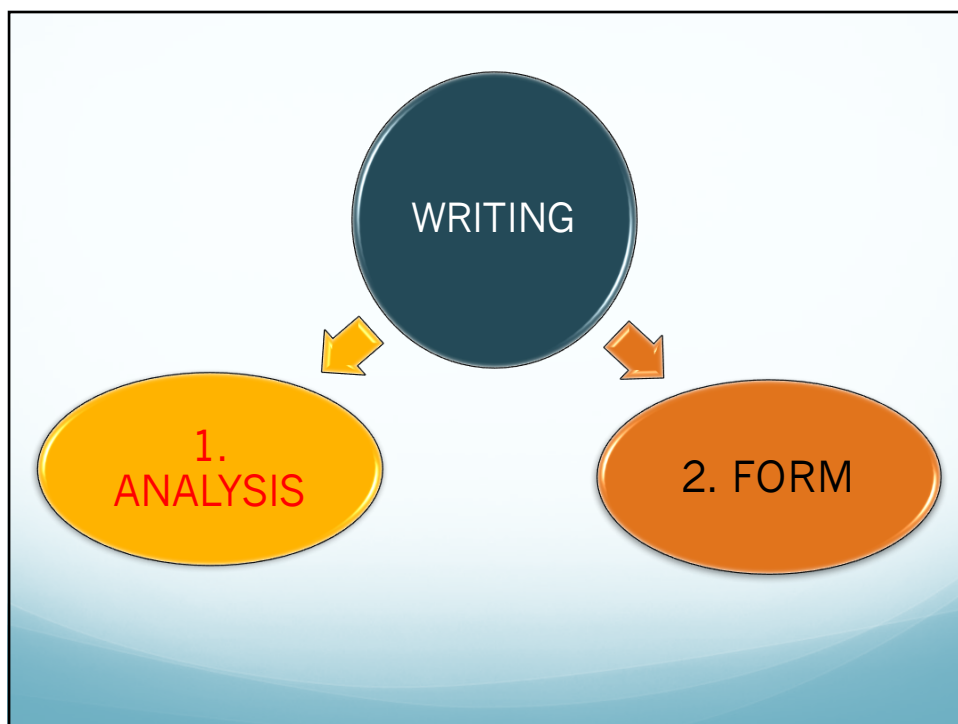How many of you read English-language books/journals on a regular basis (non-scientific)?
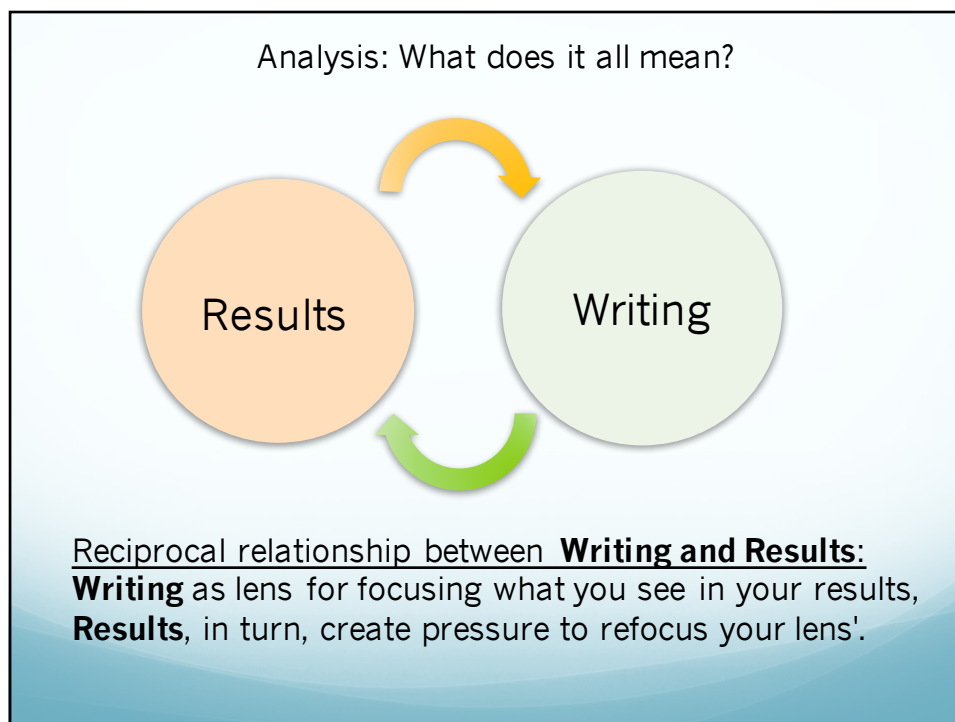
What kind of English material do you read, besides papers?

-> More questions in the questionnaire!

What is the Problem?

Where to Start?
What exactly *Is* Writing?!

WRITING

1.
ANALYSIS

2. FORM

WRITING

FORM

ANALYSIS

What does it all mean?

-> Methodical inquiry into
   the meaning of information,
   i.e. your results

Analysis: What does it all mean?

Results

Writing

Reciprocal relationship between **Writing and Results**:
Writing as lens for focusing what you see in your results,
Results, in turn, create pressure to refocus your lens'.

WRITING

FORM

ANALYSIS

-> **Writing** is a way of bringing
Order
into your
Thinking

WRITING

ANALYSIS

FORM

How to arrange words?
How to arrange sentences?
How to arrange your ideas

WRITING

ANALYSIS

FORM

AIM:
Express your Analysis
with
Clarity, Logic & **Precision**
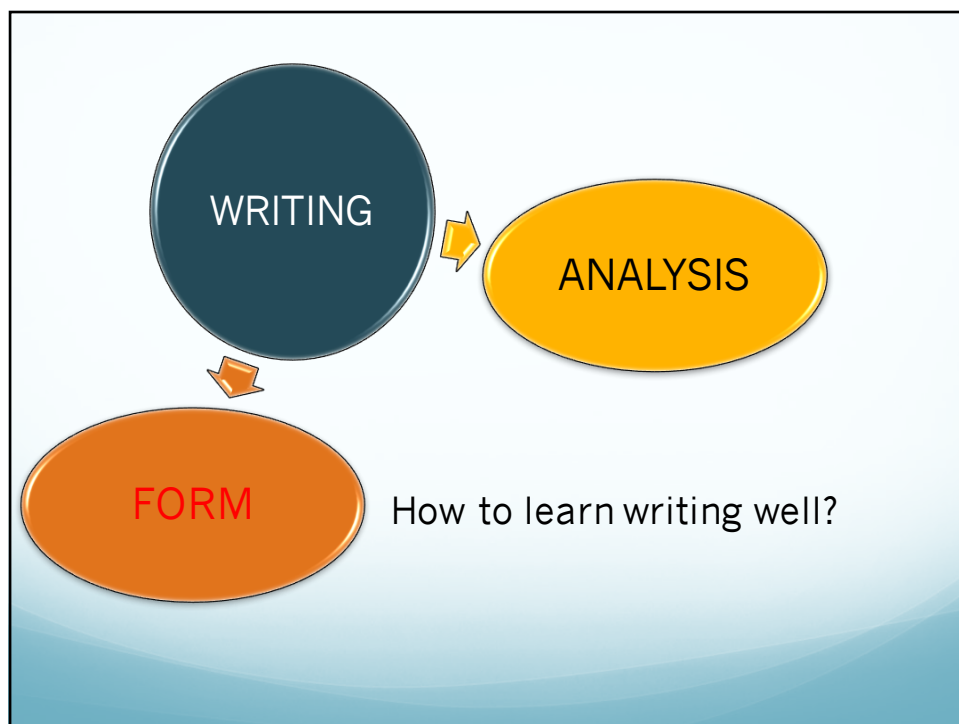

How to achieve this?
By
READING READING READING

But:

With focus on
Grammar, Style, Organization

Because
<u>Writing Well</u>
is (also) about

Grammar, Style, Organization,
Purpose & Flow

WRITING

ANALYSIS

FORM

How to learn writing well?

Questions?

Topics

1. What are the Fundamental Principles behind good Form?

2. What is a good paper (How to publish in SCI journals)?

3. How to prepare yourself for writing your first paper?

4. What are the common mistakes made by Chinese writers?

1. Fundamental Principles of Form

Example:

The Beijing Key Laboratory of Environment Science and Engineering was authorized in 2001 and successfully passed the acceptance check in 2009.

http://english.bit.edu.cn/Research/scientificResearch/94695.htm
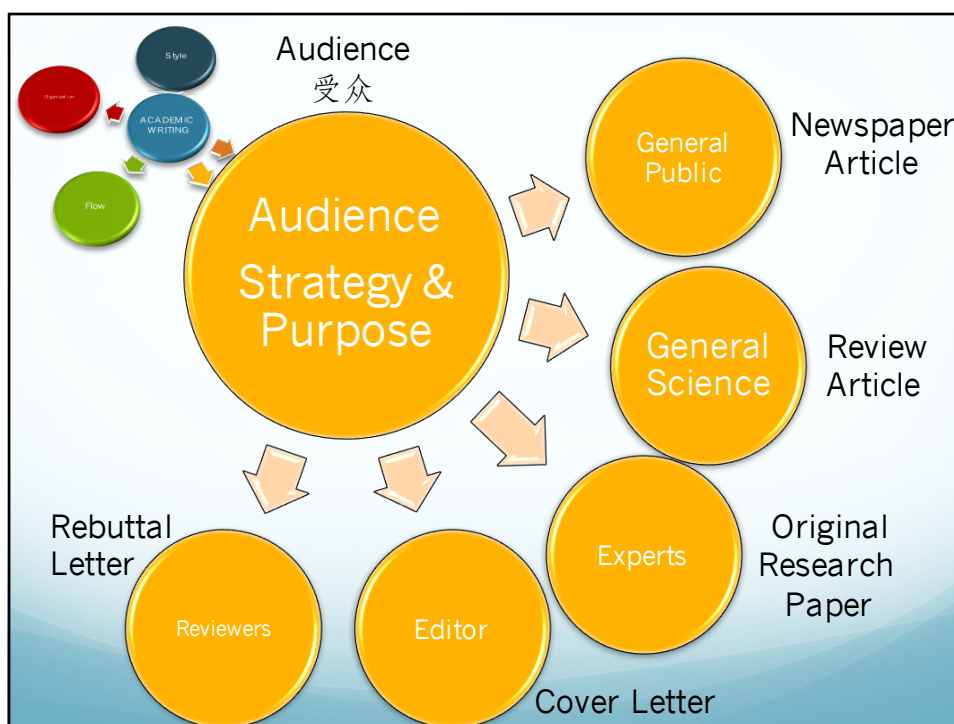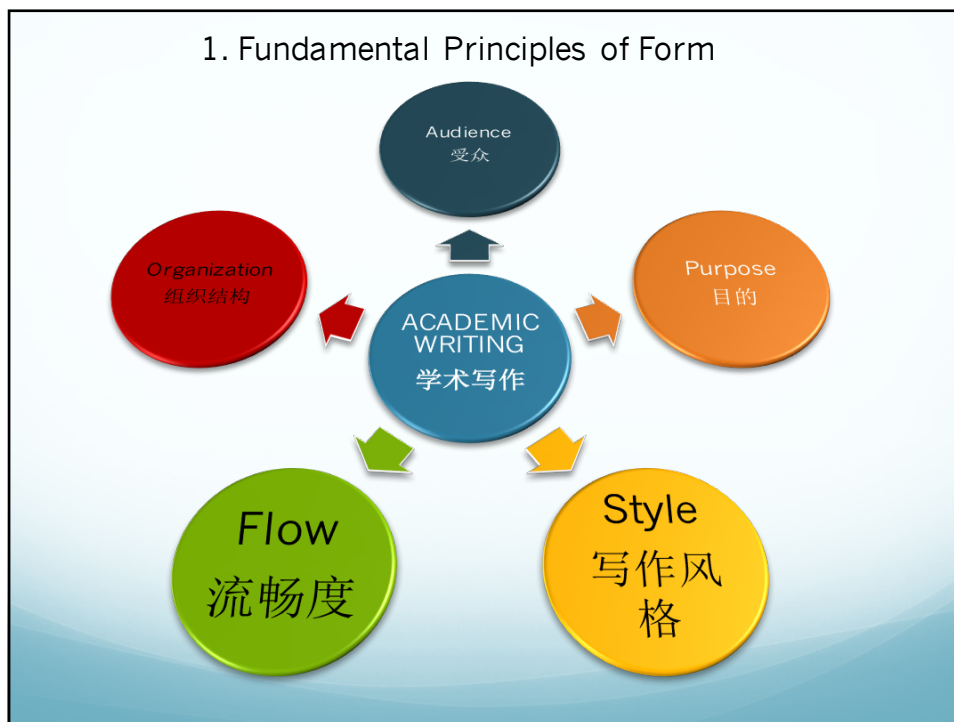
Example:

The Beijing Key Laboratory of Environment Science and Engineering was authorized**…by whom? To do what?** in 2001 and successfully passed the acceptance check in 2009.

Example:

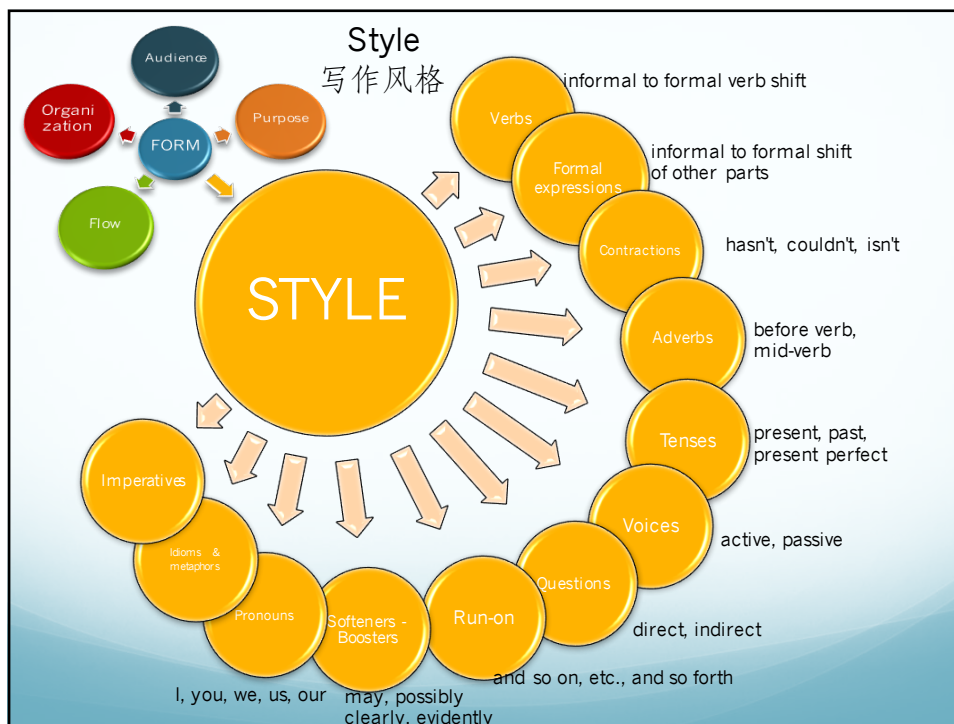The Beijing Key Laboratory of Environment Science and Engineering was authorized in 2001 and successfully passed the acceptance check: **acceptance of/for…?** in 2009.

-> for most audiences unclear (lack of context, lack of
   sufficient detail)

Questions?

Style
写作风格

STYLE

Audience
Organization
Purpose
FORM
Flow

Verbs — informal to formal verb shift

Formal expressions — informal to formal shift of other parts

Contractions — hasn't, couldn't, isn't

Adverbs — before verb, mid-verb

Tenses — present, past, present perfect

Voices — active, passive

Questions — direct, indirect

Run-on — and so on, etc., and so forth

Softeners - Boosters — may, possibly clearly, evidently

Pronouns — I, you, we, us, our

Idioms & metaphors

Imperatives

STYLE — *VERBS*

*The Vocabulary Shift - * Verbs

phrasal verb (verb + particle)
prepositional verb (verb + preposition) — single verb form

----

keep up
go to
make up — shift to ->
go down
come up

maintain
approach
constitute
decrease
offering.

STYLE

Contractions

Avoid contractions – change to more formal expressions

Examples:

This analysis *didn't get us* any new results. → This analysis *yielded No* new results.

The government *didn't allocate* much funding for the program. → The government allocated *little* funding for the program.

This problem *doesn't have many* viable solutions. → This problem has *few* viable solutions.

STYLE

Questions

5. Use of direct questions

Why has antibiotic resistance increased in the past decade?

→ Several studies have investigated *why* antibiotic resistance has increased in the past decade.

→ It is important to understand *why* antibiotic resistance has increased in the past decade.

→ It remains unclear *why* antibiotic resistance has increased in the past decade.

Informal Writing
(Newspaper Style)

So, what makes nuclear power so great as an energy source? Because it keeps improving its safety and reliability, because it's much cheaper than coal power and because you don't have such big transport issues. Just look at the emissions produced: nuclear power produces roughly 1 percent of the greenhouse gases produced by coal power station of same size. And because nuclear power fuel needs a lot less transport than does coal, this can ease pressures on transport infrastructure actually.

Formal Writing
(Academic Style)

Nuclear power is commonly presented as a major energy source of the future, mainly because of its ever-improving safety and reliability, its clear cost advantages over coal power and relatively few transport issues. For example, nuclear power produces approximately 1 percent of the greenhouse gas emissions produced by coal power station of comparable capacity. In addition, as nuclear power fuel requires less transport relative to coal, pressure on transport infrastructure of a country is considerably reduced.

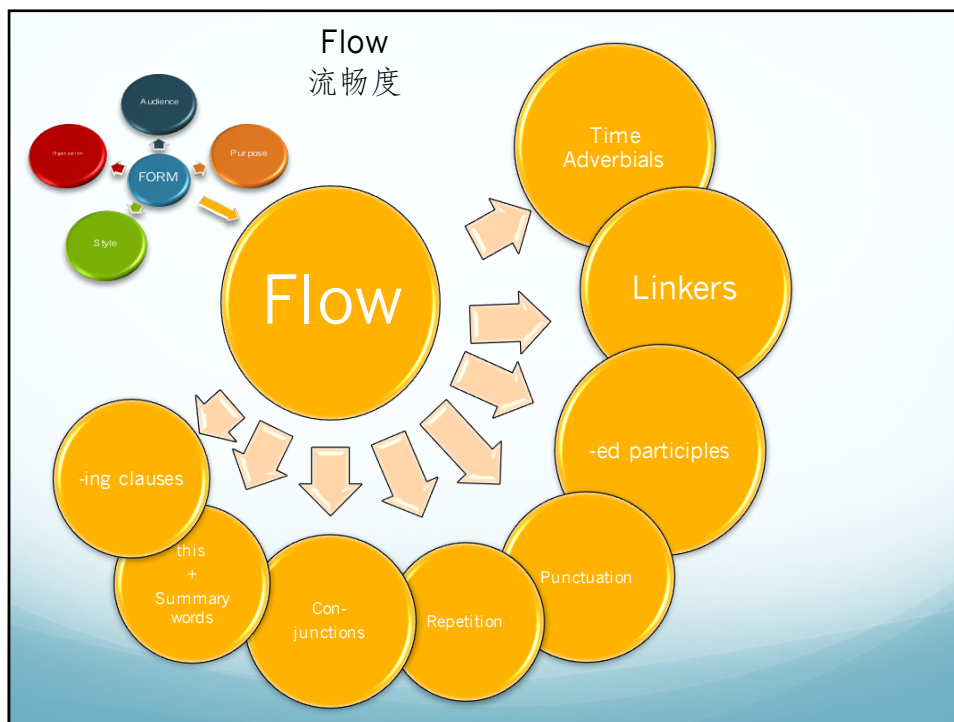What is the right Style for my Paper?

-> Major Challenge

-> Each field different conventions

Solution?

Read Read Read!
-> Read with focus on **Style**, not just **Content**

Questions?

Flow
流畅度

Connecting Ideas -> Linker Phrases

Linkers

Function	Subordinators (introduce a dependent clause that must be joined to a complete sentence)	Sentence Connectors (introduce a complete sentence or independent clause)	Phrase Linkers (introduce a noun phrase)
Addition		furthermore in addition moreover	in addition to
Adversativity	although even though despite the fact	however nevertheless	despite in spite of
Cause and effect	because since	therefore as a result consequently hence thus[1]	because of due to as a result of
Clarification		in other words that is i.e.	
Contrast	while whereas	in contrast however on the other hand conversely	unlike
Illustration		for example for instance	
Intensification		on the contrary as a matter of fact in fact	

AWG, 3rd Edition

Flow

Linkers

* use **formal** linker phrases (avoid *Meanwhile*, *Besides, So*)

* Do not worry about **Repeats**!

One word about avoiding
word **Word Repeats...**

Priorities in Academic Writing:

1. Clarity,
2. Simplicity,
3. Precision,
4. Logic,
.
.
.
99. Elegance

Flow

Linkers

* Avoid use of **And, Or, But** at Sentence beginning

* Use time adverbials (First, Second, Next, Then, Lastly)

* Read your papers with focus on these elements of Flow

* Do not copy+paste -> **Paraphrase** in your own words

Effect of Copy+Paste on Flow

Sentence 1

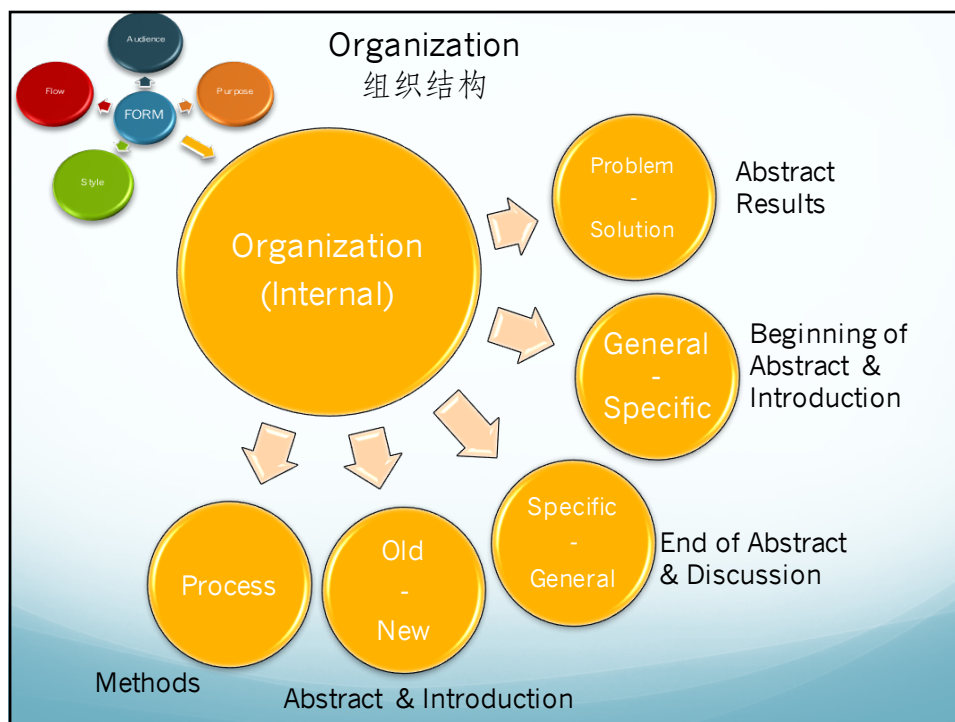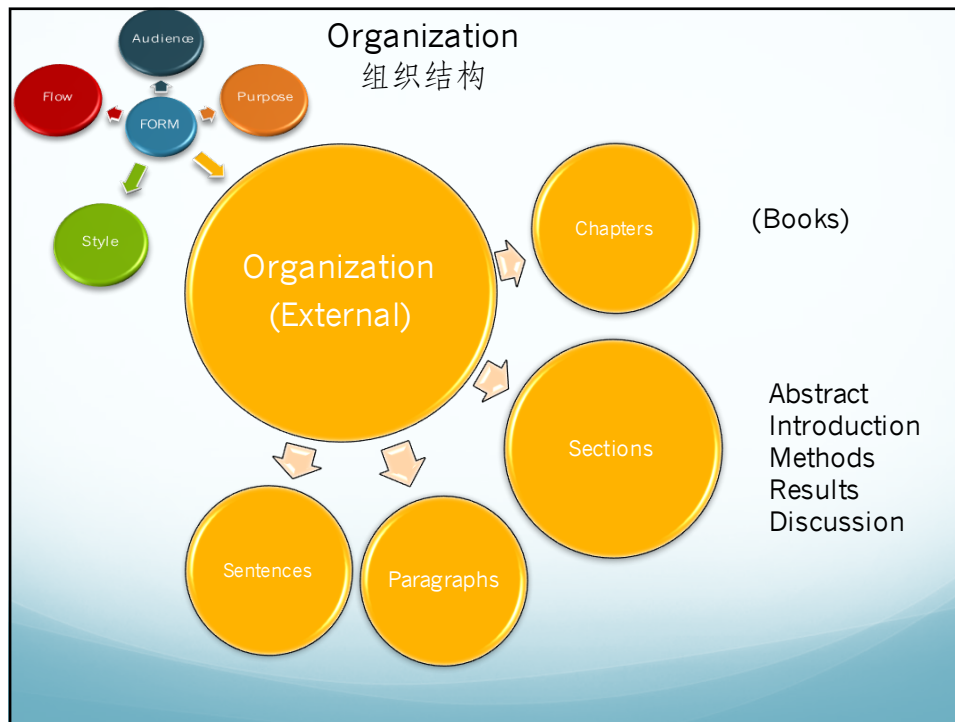Sentence 2

Sentence 3

Sentence 4

Loss of Logical Connection

Suggestion for Group Exercise:

* Today - Read a paragraph/section
                              (focus on Content & Form)

* Tomorrow – Write in your own words
                              (without original)

* Compare for meaning and language (Peer Review?)

* Practise by Repeating

Questions?

Organization
组织结构

Organization
(External)

Chapters

(Books)

Sections

Abstract
Introduction
Methods
Results
Discussion

Sentences

Paragraphs

Organization
组织结构

Organization
(Internal)

Problem
-
Solution

Abstract
Results

General
-
Specific

Beginning of
Abstract &
Introduction

Specific
-
General

End of Abstract
& Discussion

Process

Old
-
New

Methods

Abstract & Introduction

Organization

* information ALWAYS presented in structured form

* structured: patterns of writing regular and predictable

* function: 'to take the reader by the hand', and guide your audience through your 'story'

* organization depending on purpose

Internal Organization

P->S
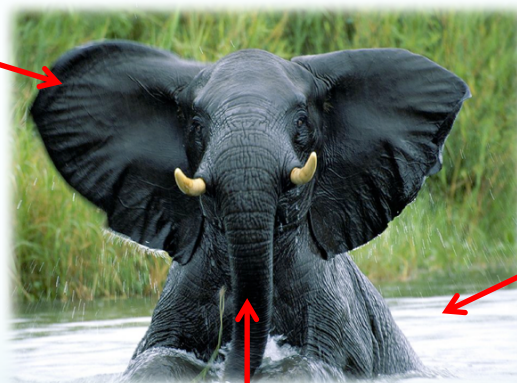
O->N

G->S/S->G

Questions?

Topics

1. What are the Fundamental Principles behind good Form?

2. **What is a good paper (How to publish in SCI journals)?**

3. How to prepare yourself for writing your first paper?

4. What are the common mistakes made by Chinese writers?

What is a 'good' paper?

* Importance of your research
* Originality
* SuRpR SiNgNeS

What defines *Originality?*
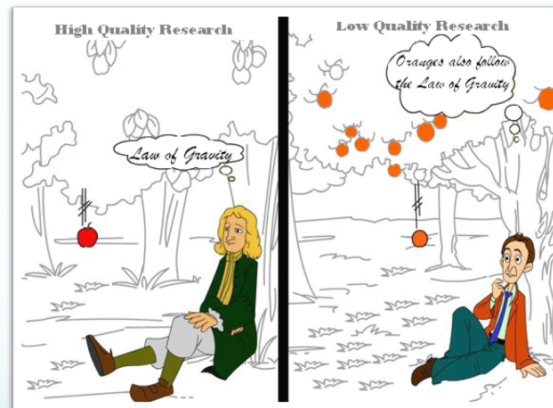
* Advances a theory
* Fills an empirical gap
* Introduces new methodology

Avoid "me too" Research

No matter how well written, the success of a manuscript depends primarily on its **CONTENT**!

-> make sure your data are sound, provide novel insights, with some surprise factor and intriguing findings
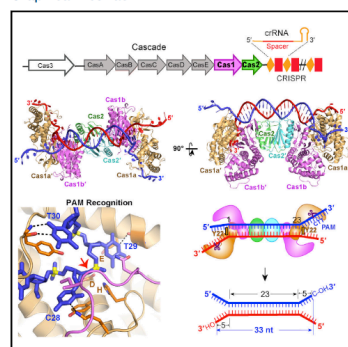
Some anecdotal evidence from my work as scientific language editor

Some anecdotal evidence from my work as scientific language editor

Some anecdotal evidence from my work as scientific language editor

Science

| Home | News | Journals | Topics | Careers |

Science | Science Advances | Science Immunology | Science Robotics | Science Signaling | Science Translational Medicine

SHARE

REPORT

Cryo-EM shows the polymerase structures and a nonspooled genome within a dsRNA virus

Hongrong Liu[1],[*],[†], Lingpeng Cheng[2],[*],[†]

[1]College of Physics and Information Science, Hunan Normal University, Changsha, Hunan
[2]School of Life Sciences, Tsinghua University, Beijing 100084, China.
[*][†]Corresponding author. E-mail: hrliu{at}hunnu.edu.cn (H.L.); lingpengcheng{at}mail.tsin
[*] These authors contributed equally to this work.

Science 18 Sep 2015:
Vol. 349, Issue 6254, pp. 1347-1350
DOI: 10.1126/science.aaa4938

submitted to Nature late-2014
-> rejected
submitted to Science early-2015
first round 3 months
second round 3 months
-> accepted in later 2015

Some anecdotal evidence from my work as scientific language editor

Title: *Appetite-enhancing neurons mediate hunger/satiety states and promote obesity in Drosophila*

submitted to Nature -> rejected ☹

submitted to Cell -> rejected ☹

submitted to Science –> rejected ☹

submitted to Nature Neuroscience -> under review

So, to get published in good journals,

you must have have some exciting findings!

-> necessary, but NOT sufficient!

In addition, your writing must be in line with

the rules and conventions of academic writing

in your field!

Questions?

Topics

1. What are the Fundamental Principles behind good Form?

2. What is a good paper (How to publish in SCI papers)?

3. **How to prepare yourself for writing your first paper?**

4. What are the common mistakes made by Chinese writers?

<u>Before writing a manuscript:</u>

* Forget everything your English teacher told you about

BEAUTIFUL writing

* Start **reading!** Read published papers with focus on **GRAMMAR**

* Remember: YOU are the expert, NOT your reader!

3. How to prepare yourself for writing your first paper?

Getting started – Methods of reducing the pain

TIP 1 Check the internet for relevant information

* Your International Society

* Journal Websites
  Nature/Science/PNAS

* Publishing Houses (Elsevier, PLOS et al.)

* Papers of well-established (native English-speaking) authors
  with good track = writing record

3. How to prepare yourself for writing your first paper?

3. How to prepare yourself for writing your first paper?

TIP 2 Discuss with your supervisor the journal of choice

TIP 3 Use SIMPLE & CLEAR English

* short sentences – lots of full stops
* direct sentences
* use both active voice and passive voice
* No 口语 (But what exactly is academic-style writing?!)
* use sentence patterns found in published articles

-> big challenge to many student writers!

3. How to prepare yourself for writing your first paper?

TIP 4 Remember that writing is different to editing

3. How to prepare yourself for writing your first paper?
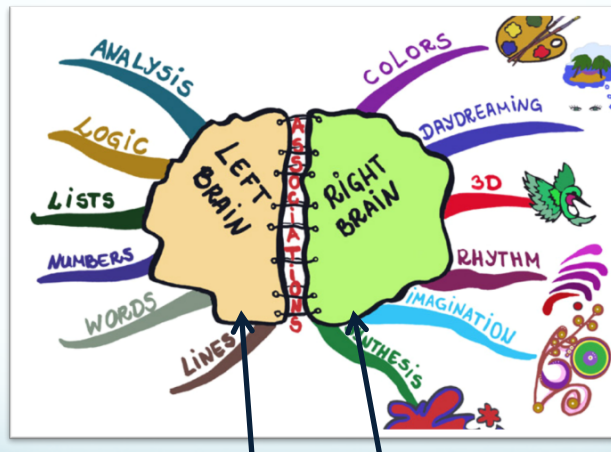
-> **Editing** and **Writing** are two
completely different brain activities!!!

3. How to prepare yourself for writing your first paper?

TIP 4 Remember that writing is different to editing

      * your very first draft does not have to be perfect!

      * train of thought important

      * focus on - the logic of your argument
                         - connection between your individual results
                         - connection between results and literature

3. How to prepare yourself for writing your first paper?

TIP 5 Develop a READING habit

* short-term: scientific articles in your field
* long-term: fiction, novels, popular science magazines

READING READING READING

READING READING READING

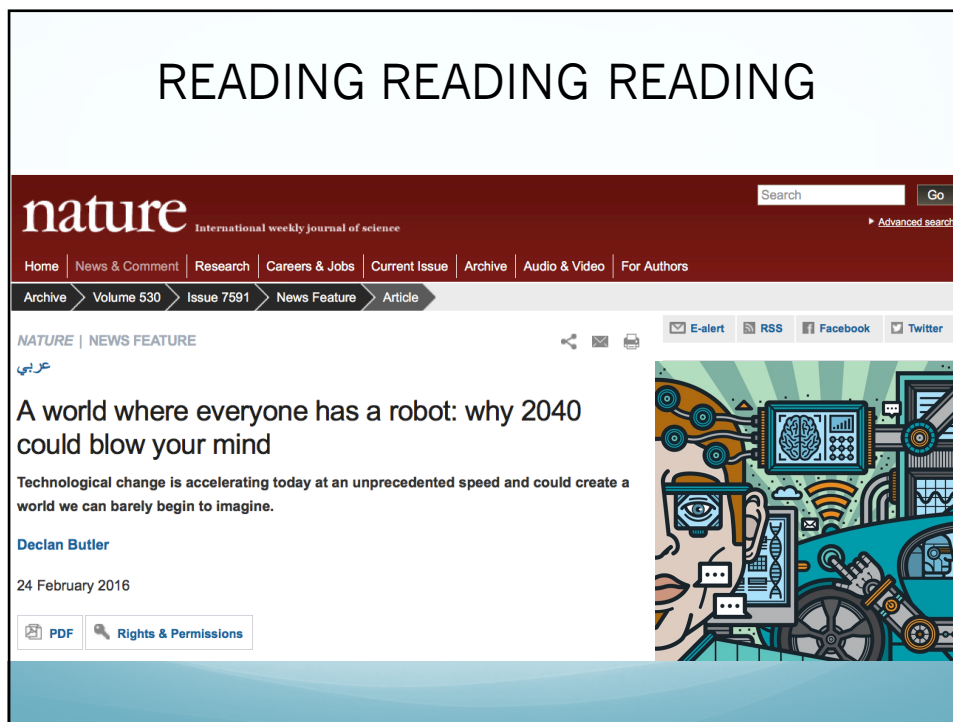# READING READING READING

3. How to prepare yourself for writing your first paper?

TIP 6 Read like an editor

* read articles with **grammar focus** (the/a, sentence beginnings etc.)

* collect new words, sentence structures and phrases

* compare section-specific differences

Example:
Highlight all **Verbs** used in this abstract, and add them to your verb dictionary. Then analyze the grammatical **Tense** used for each verb, and check which **Voice** is used. In addition, check the **subject** or **object** each verbs is referring to.

Mice carrying mutations in multiple genes are traditionally generated by sequential recombination in embryonic stem cells and/or time-consuming intercrossing of mice with a single mutation. The CRISPR/Cas system has been adapted as an efficient gene-targeting technology with the potential for multiplexed genome editing. We demonstrate that CRISPR/Cas-mediated gene editing allows the simultaneous disruption of five genes (Tet1, 2, 3, Sry, Uty--8 alleles) in mouse embryonic stem (ES) cells with high efficiency. Coinjection of Cas9 mRNA and single-guide RNAs (sgRNAs) targeting Tet1 and Tet2 into zygotes generated mice with biallelic mutations in both genes with an efficiency of 80%. Finally, we show that coinjection of Cas9 mRNA/sgRNAs with mutant oligos generated precise point mutations simultaneously in two target genes. Thus, the CRISPR/Cas system allows the one-step generation of animals carrying mutations in multiple genes, an approach that will greatly accelerate the in vivo study of functionally redundant genes and of epistatic gene interactions. ¶

Example:

Highlight all **strings of nouns** in the text below, and analyze the average length of these strings.

noun strings:
Mice carrying mutations in multiple genes are traditionally generated by sequential recombination in embryonic stem cells and/or time-consuming intercrossing of mice with a single mutation. The CRISPR/Cas system has been adapted as an efficient gene-targeting technology with the potential for multiplexed genome editing. We demonstrate that CRISPR/Cas-mediated gene editing allows the simultaneous disruption of five genes (Tet1, 2, 3, Sry, Uty--8 alleles) in mouse embryonic stem (ES) cells with high efficiency. Coinjection of Cas9 mRNA and single-guide RNAs (sgRNAs) targeting Tet1 and Tet2 into zygotes generated mice with biallelic mutations in both genes with an efficiency of 80%. Finally, we show that coinjection of Cas9 mRNA/sgRNAs with mutant oligos generated precise point mutations simultaneously in two target genes. Thus, the CRISPR/Cas system allows the one-step generation of animals carrying mutations in multiple genes, an approach that will greatly accelerate the in vivo study of functionally redundant genes and of epistatic gene interactions.

---

3. How to prepare yourself for writing your first paper?

Getting started – Summary

* start with an internet fact finding mission

* do not try and outdo Shakespeare!

* avoid multitasking!

* keep a record of new vocabulary and phrases

* practise using original articles in your field

Questions?

---

3. How to prepare yourself for writing your first paper?

Common Manuscript Structure

1. Title + Abstract

2. Introduction

3. Methods (or after Discussion)

4. Results

5. Discussion

3. How to prepare yourself for writing your first paper?

WRITING THE FIRST DRAFT

6. Order of Publishing versus Writing

QUESTION:

In what order would you write your Manuscript?

In what order would you write your Manuscript?

https://www.wenjuan.com/s/u6bQfe/

In what order would you write your Manuscript?

https://www.wenjuan.com/s/u6bQfe/
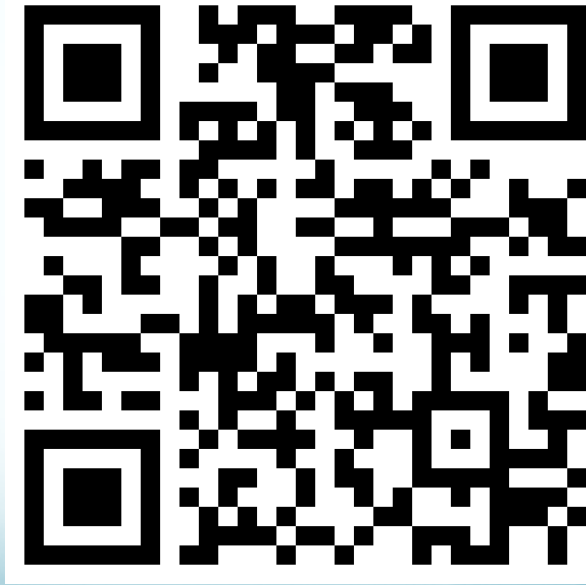
Consensus on Order of Writing?

1	2	3	4
Title	Introduction	Title	Methods
Abstract	Results	Introduction	Results
Introduction	Discussion	Methods	Discussion
Methods	Title	Results	Introduction
Results	Abstract	Discussion	Abstract
Discussion	Methods	Abstract	Title

3. How to prepare yourself for writing your first paper?

Writing your first draft

Order of writing different – one of various ways:

0. (Literature review: Course requirement?)

1. Methods: while doing experiments/field work

2. Figures and Legends: upon completion of your experiments

3. Results and Discussion: on the basis of your figures and tables

4. Introduction: based on Literature review?

5. Abstract + Title: last (most difficult)

---

3. How to prepare yourself for writing your first paper?

Writing your first draft

Results & Discussion – What did you find, what does it mean?

* written on the basis of your figures and tables

* ensure figures in a logical order (not chronological)

-> do not care about the language, focus on substance!

3. How to prepare yourself for writing your first paper?

Writing your first draft

Introduction – Why did you do your study?

* the 'white lie' phenomenon

Why did you do this project?

    a) because my supervisor told me so
    b) because none of the other projects worked out
    c) because I want to win the Nobel price

  -> your readers NOT interested in this, are they?!

---

3. How to prepare yourself for writing your first paper?

Writing your first draft

Introduction – Why did you do your study?

* what is the current state of knowledge in your field?
   -> literature review good starting point

* what previous studies are your experiments based on?

3. How to prepare yourself for writing your first paper?

SUMMARY – First draft

* plan ahead: literature review and figures + legends

* find a space away from all sources of distraction

* do not worry about spelling, grammar, elegance

Questions?

3. How to prepare yourself for writing your first paper?

Editing the first draft

* WRITING focused on

information, NOT language or organization

* EDITING all about

logic, clarity, order, precision

---

3. How to prepare yourself for writing your first paper?

Editing the first draft

1. **Results**

* start every results section with this construct:

In order to/To…investigate…,   (motivation)
…we performed/measured/…   (focus)
…using…   (method)

use sparsely: Further, we did…./ Next, we did…

3. How to prepare yourself for writing your first paper?

Editing the first draft

1. Results

* end each Results section with short summary:

In conclusion,...
Together,...
...these result suggested/indicated that...

3. How to prepare yourself for writing your first paper?

Editing the first draft

2. Discussion

Basic structure:

1. short summary your main findings

2. then discuss each finding in the context of the literature

3. lastly, provide broader perspective

3. How to prepare yourself for writing your first paper?

Editing the first draft

2. Discussion

* do NOT repeat detailed description of every single result

* do NOT refer to specific Figures

* do NOT repeat introduction

-> check for sentence patterns in published articles
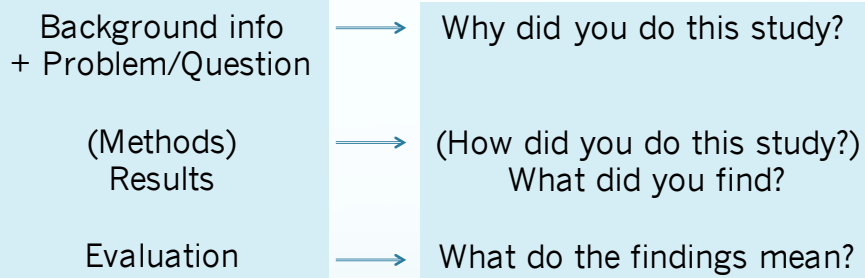
3. How to prepare yourself for writing your first paper?

Editing the first draft

Title & Abstract: Your findings in a nutshell

* this is what most people will ever look at - IMPORTANT!

* challenge: to be both **precise** AND **concise**

* title length around 20 words (ideally no more than 23)

* abstract usually between 150 -250 words

3. How to prepare yourself for writing your first paper?

Abstract: Mini Paper

Background info + Problem/Question	→ Why did you do this study?
(Methods) Results	→ (How did you do this study?) What did you find?
Evaluation	→ What do the findings mean?

How to write a good Abstract?
A bit more detail (Nature guidelines)

1. One or two sentences providing a **basic introduction** to the field, comprehensible to a scientist in any discipline.

2. Two to three sentences of **more detailed background**, comprehensible to scientists in related disciplines.

3. One sentence clearly stating the **general problem** being addressed by this particular study.

4. One sentence summarizing the main result (with the words "**here we show**" or their equivalent).

How to write a good abstract?

5. Two or three sentences explaining what the **main result** reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.

6. One or two sentences to put the results into a more **general context**.

7. Two or three sentences to provide a **broader perspective**, readily comprehensible to a scientist in any discipline, may be included in the first paragraph if the editor considers that the accessibility of the paper is significantly enhanced by their inclusion. Under these circumstances, the length of the paragraph can be up to 300 words. (This example is 190 words without the final section, and 250 words with it).

The AiWrite Tutoring Project

The AiWrite Project

iWrite | Write | SIGN IN

Writing

Title
> title...

1: General Introduction
> write...

2: More detailed Background
> write...

3: Purpose / Problem / Question / Gap in the literature
> write...

4: Method
> write...

Guidance

6. Conclusions / Summary / Assessment of Solutions / Recommendations

Please write 1-2 sentences to place your findings in a general context, and explain how your results advance the field of your study. Then provide a sentence or two about the broader perspective, understood by researchers outside of your field.

General Structure:

No 1. In summary,...(our study provides new insights into...)

No 2. In conclusion,...(our findings provide strong evidence for...)

No 3. Together, our study suggests...

Example:

No 1. Our approach significantly outperforms standard tf.idf weighting on two different collections and query sets

No 2. This analysis could help inform strategies to monitor and mitigate air quality impacts and provide broader insight into the response of winter ozone to primary pollutants.

No 3. Remedies that address these challenges are needed to substantially improve scientific writing instruction.

www.bioinfo.org.cn/iwrite

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3. How to prepare yourself for writing your first paper?

SUMMARY – Editing

* use standard phrases in all sections

* focus on the language (Precision, Clarity)

* ensure proper spelling & grammar -> HALO

* verify format in line with Author's Instruction

Topics

1. What are the Fundamental Principles behind good Form?

2. What is a good paper (How to publish in SCI journals)?

3. How to prepare yourself for writing your first paper?

4. **What are the common mistakes made by Chinese writers?**

Common mistakes and errors
-SUMMARY-

To **delete** from your vocabulary:

* **some** (use 'a number of')
* **obviously** (use evidently/visibly/clearly...)
* **can/can be/could be** (too vague, unnecessary after indicate/suggest)
* **it/they** (preferably refer to the actual object/subject/agent)
* **There are/There is**
* emotional language (amazing, huge, fantastic)
* Figurative speech

Common mistakes and errors
-SUMMARY-

To look out for (appear in 100% of papers):

* noun strings (名词的串)
  for example: '**Online teacher professional development community**'

* multiple plurals in a string of nouns (only LAST noun can be in Plural)
  for example: **courses fund, cases analysis, mountain rural areas
          development orientation**

* too many comma (if more than two, think of using full stops, and remove
          awkward clauses)

* subject-verb disagreement
  for example: **Our study were conducted...**

* incorrect use of tenses (discussed in detail)

* incorrect use of articles (a/an; the; no article – MOST DIFFICULT!)