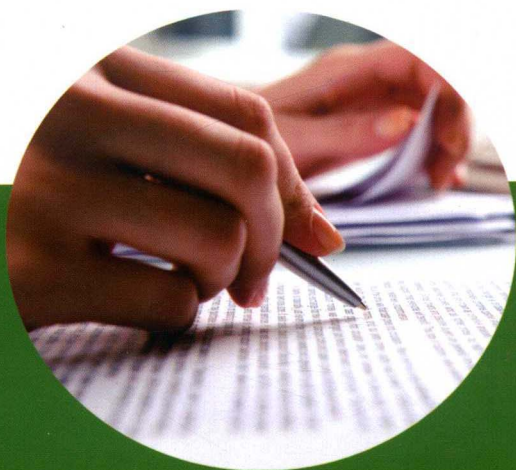


Improvements on Scientific-Journal-Paper Writing Skills



Coauthored by
Tien-Mo Shih Chenxu Wu Yufeng Zhang

施天谟 吴晨旭 张宇锋 著



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Preface

Generally, writing scientific manuscripts in English is quite a challenging task for non-English speaking authors. Several threads of thoughts may simultaneously emerge in authors' minds, including (a) how their ideas can be transformed from their brains to words on the computer screen clearly, so that readers can understand them, (b) how sentences can be connected logically, so that readers can follow them, (c) how all technical information can be conveyed completely and correctly, so that it can convince and educate readers, and (d) how the manuscript can be presented professionally, so that it can be accepted by journal editors. Not surprisingly, authors may end up sitting in front of the computer screen, typing and erasing iteratively, as well as pondering but feeling frustrated for hours without accomplishing writing merely a couple of decent sentences.

This book is written to improve authors' writing abilities towards scientific journal papers. In particular, it helps authors to organize their thoughts, wisely divide the challenging task into a few steps, and tackle these sub-tasks (namely, thought-to-word transformation, logical connection, technical-information conveying, and final beautification) one at a time. By so doing, they save tremendous amount of their writing time, change their manuscripts' fates from rejection to acceptance, or elevate the

quality of their manuscripts to fit higher-tiered journals.

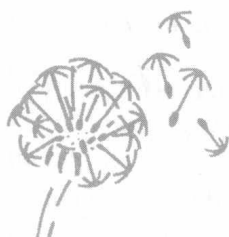
In terms of the book's structure, Chapter 1 introduces definitions of various writing-ability levels, a paragraph that contains commonly-committed errors, and explanations of errors. In Chapters 2 and 3, these errors are expanded comprehensively and explained with examples. Next, sentences need to be fluently connected. Reading "We work. We play", readers must guess what the author attempts to say. To read "We work. Then we deserve to play", readers immediately understand that the author intends to offer the advice of balancing daily-life activities. The connecting material occupies Chapter 4. Another critical attribute in skillful scientific writing is clarity, which includes techniques of using "it" and abiding by proper time tenses. We devote Chapters 5 and 6 to describing this attribute.

In Chapters 7 and 8, we list most of powerful verbs, nouns, adjectives, and adverbs that are frequently used in scientific writing. The sentence "Einstein field equations make it easy for us to understand general relativity" can be improved to "Einstein field equations facilitate our understanding of general relativity". The powerful verb, "facilitate", makes this improvement possible. Then, high-tiered journals often impose page limitations on individual articles. It is therefore imperative for us to learn "conciseness", which is covered in Chapter 9. In addition to fluency, clarity, and conciseness, Chapters 10 and 11 are dedicated to logic, which may be the most important attribute in writing a technical essay. An essay that is filled with fluent, clear, and concise sentences language-wise is wonderful. However, it may remain confusing to readers if it lacks logic. Finally, in Chapter 12, the American culture is briefly introduced.

We authors feel appropriate to add such an introduction because a great percentage of our readers may eventually study and work in the U.S. It is nice for them to, for example, refrain themselves from spitting on the ground nonchalantly, from pointing the blackboard with middle fingers, or from expecting their parents to financially support them for a long time.

As a final remark, although this book is primarily written for writing-skill improvements towards journal-paper publications, it should also help readers in non-scientific areas to improve their English-writing abilities in general essays and daily-life communications.

All three authors of this book are officially affiliated with the Department of Physics, Xiamen University. It is our understanding that writing such an advising book in the area of scientific writing constitutes a relatively new endeavor. Comments and suggestions are humbly welcomed. From the website of the Department of Physics, readers can conveniently find our e-mail addresses.



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Introduction

1. Review the course syllabus

This book is designed for a course that is structured to be taught for a semester with approximately two hours a week and 14 weeks a semester. It is suggested that the first 70 minutes be dedicated to lecture delivering and the remainder of the class be dedicated to in-classroom practices or interactions.

2. Explain the objective of the course in terms of Table 1

- (a) The maximum score for each attribute is 10; the total maximum score for an article is 80.
- (b) It is very difficult for an article to attain 80.
- (c) An article that scores > 75 is usually written and polished by a few collaborative coauthors.
- (d) It is hoped that we can all reach level IV or higher upon finishing this class.

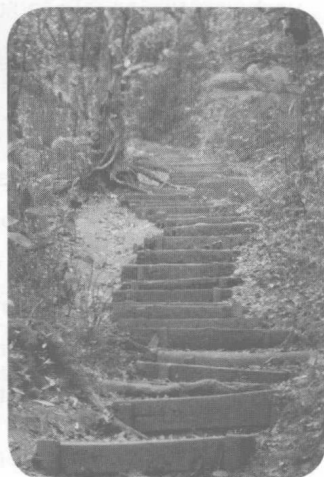


Table 1 English writing levels and attributes used for evaluation of these levels

Attribute \ Level	I	II	III	IV	V	VI	VII	VIII
Grammar	3	7	8	9	10	10	10	10
Fluency	3	4	7	8	8	9	9	10
Clarity	3	3	4	8	8	9	9	10
Word Power	3	3	3	3	8	9	9	10
Conciseness	3	3	4	4	5	8	9	10
Logic	3	3	3	3	4	5	9	10
Minimal Foreign Accents	3	4	5	6	7	8	9	10
Creativity	0	0	0	1	2	3	4	5
Total Scores	21	27	34	42	52	61	68	75

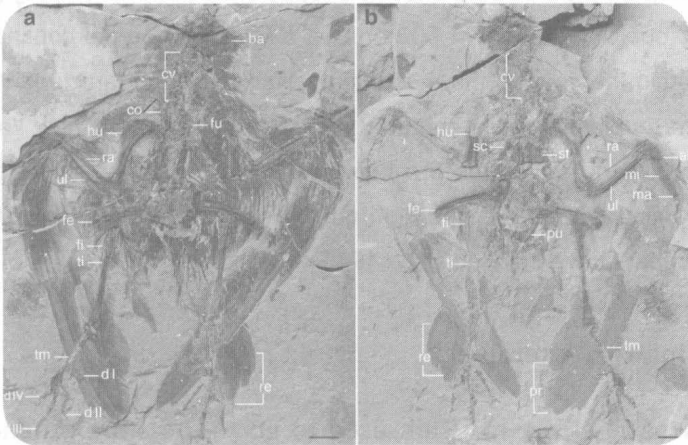
3. An example of improving a mini-article (a paragraph)

Level II: Grammar usage is questionable; the fluency is low; the content is not too clear; colloquial words are used; the description is verbose; the article lacks logic; it contains foreign accents. Note that there are totally seven sentences in the paragraph.

2015¹ is² a new beginning³ in the history of *Journal of Semiconductors*. It⁴ is growing to nearly publish⁵ 4 500 articles a year. We welcome both theoretical and experimental work⁶. It is now the most highly cited full length article journal⁷ in the Applied Physics category of JCR. We founded the journal in 1945⁸. Hope that our readers will like the journal from now on⁹. A broad readership is difficult to retain¹⁰.

Explanation of errors (or inappropriateness) from superscript 1 to 10:

- 1 Numbers (e. g., 2015), acronyms (e. g., IBM), abbreviations (e. g., Fig. 3), and symbols (e. g., β_1) are prohibited to lead a sentence.
- 2 The verb “is” lacks the word power. In fact, “the verb to be” is considered a “diluted” verb that reduces the information concentration of a sentence. Its usage should be minimized whenever possible.
- 3 “New beginning” sounds repetitive. Neither do we say, “Hey, I did not hear you clearly. Could you *repeat* again?”
- 4 “It” is not clear. Does “it” denote “beginning”, “history”, or “journal”?



- 5 Here “to” is a preposition. Hence, “publish” should read “publishing”.
- 6 The whole sentence is out of place, and is not logically embedded in the paragraph. It should be deleted.
- 7 The phrase should read: highly-cited full-length-article.
- 8 This sentence is the sixth one that consecutively sounds monotonous, similar, and choppy. “Choppy” is the opposite of

“fluent”.

9 “From now on” sounds colloquial.

10 The sentence contains a hint of foreign accents. Foreigners often say, “A good friend is difficult to find.” We need to think carefully here. Is “a good friend” difficult, or is “finding a good friend” difficult?

Level VII: There are only three sentences in the paragraph. The only attribute that is lacking is creativity. “Marks” and “enjoyed” are powerful verbs.

The year 2015 *marks* the beginning of an important new chapter in the history of *Journal of Semiconductors*. Having grown to publishing nearly 4 500 articles a year, the journal continues to retain the spot as the most highly-cited full-length-article journal in the Applied Physics category of JCR. As it begins a new volume, important new steps are being taken to ensure that the journal continues to deliver the high quality and relevant research that its readers have *enjoyed* since 1945.

4. Homework exercises

- (a) Identify errors in [I am used to go to the store around the street corner to buy a bread every morning. I must admit that this store is very convenient for me to go shopping at.].
- (b) Identify errors in [Nearly everybody needs friends. They help us to live our lives colorfully.].
- (c) Identify an inappropriate language usage in [Fig. 1 shows the SEM image for a graphene layer.].

- (d) Find errors in [In the following section, we will show that the Jacobian method iterates α values repeatedly 10 times, but the Gauss-Seidel method does only 4 times.].
- (e) Improve [Sometimes people want something badly. So they pray for it, instead of dedicating their effort to get it.].



Chapter 2

Frequently-Committed Errors (I)

1. Grammatically-incorrect errors

Let us start with serious errors in this chapter. Later in Chapter 3, we will review grammatically-correct, but inappropriate, errors.

* **Article.** In general, a singular noun should be preceded with an article: “a” or “the”. The purpose of including an article is to clarify that the word is a noun. If a noun is mentioned the first time, in principle, we should use “a”. If several nouns are jointly mentioned, and if it is clear that they are all nouns, perhaps “the” can be omitted.

Examples:

- (a) I woke up in middle of night. Correct form: [in the middle of the night].
- (b) In the present study, we investigate the Brownian phenomenon. Correct form: [a Brownian phenomenon] or [Brownian phenomena].
- (c) I just received a good news from my sister. Correct form: [... received good news..., or...received a piece of good news...].
- (d) A gentleman should possess characters of the bravery, the mercy, and the thoughtfulness. Correct form: [...characters of bravery, mercy, and thoughtfulness].

- * **“As if (or as)” vs “like”.** Pay attention to the difference of these two phrases. The former should be followed by a clause, whereas the latter should be followed by a phrase.

Examples:

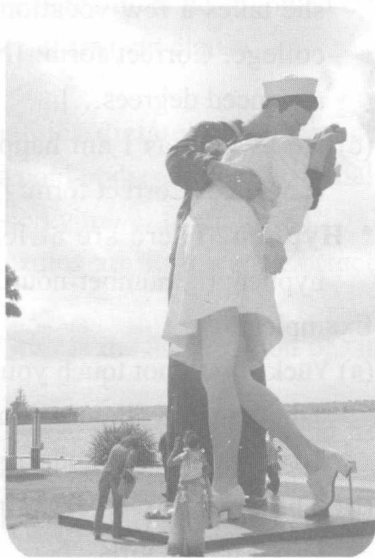
- (a) Let us drink to our hearts' content like there is no tomorrow.
Correct form: [...as if there...].
- (b) Let us wash our hands before we eat, like hygiene rules teach us. Correct form: [...as hygiene rules...].
- (c) As an athlete, John runs as a horse. Correct form: [...runs like a horse.].

- * **“Between” vs “among”; “each other” vs “one another”.**

English is a rigorous language.
It treats one person, two people, and more than two people differently.

Examples:

- (a) Mary and John love one another.
Among them, everything is shared. Correct form: [...each other. Between them, ...].
- (b) Alice, Betty, and Kathy like each other. Between them, Betty is the oldest. Correct form: [...one another. Among them...].



- * **Cannot.** Note that “cannot” exists as a single word.

Example: I can not understand why we lost. Correct form: [...cannot understand...].

- * **Clause of question form.** When a question is imbedded in a sentence as a clause, it must be converted into a plain narrative form.

Example: Did you know why can Bill Gates succeed so gloriously? Correct form: [...know why Bill Gates can...].

* **Connector.** There are several coupled connectors that must be compulsorily memorized.

Examples:

(a) On the one hand, Mary likes John's honesty. On the other hand, she feels uncomfortable of his frankness. Correct form: [On one hand, ...].

(b) Not only my sister pursues her advanced degrees, but also she takes a few vocational classes concurrently outside the college. Correct form: [Not only does my sister pursue her advanced degrees...].

(c) He as well as I am happy to learn that the exam has been cancelled. Correct form: [He as well as I is...].

* **Hyphen.** There are at least three types of usages for the hyphen: (a) number-noun, (b) adjective-noun, (c) noun-noun.

Examples:

(a) Yuck! I will not touch you with a 10-feet pole after you took a 7-hours trip without taking a shower first. [Correct form: ...a 10-foot pole...a 7-hour trip...].

(b) There are three red-hair girls in my class. Correct form: [...red-haired girls...].

(c) Consider a boundary layer flow over a flat plate. Correct form: [...a boundary-layer flow...].