

# How to Develop Academic English Writing Ability and Writing Skills for Research Papers

如何培養英文學術論文寫作能力與技巧

國立交通大學 郭志華教授

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# Lecture Outline

- ① Developing Academic Writing Ability
  - ② Academic Writing Style
  - ③ Writing Problems of NN Writers
  - ④ Academic Vocabulary
  - ⑤ Special Grammatical Usages
  - ⑥ Rhetoric

# Lecture Outline

- ◎ Writing Research Papers
  - ◎ Introduction to Research Papers
  - ◎ Abstract
  - ◎ Introduction
  - ◎ Methods and Materials
  - ◎ Results
  - ◎ Discussions and Conclusions
- ◎ Suggestions

# Developing Academic Writing Ability

- ◎ Academic Writing Style
  - Formal 正式
  - Concise 簡潔
  - Precise 精確
  - Impersonal 非個人化 (客觀)
  - Sophisticated 豐富精緻
  - Specialized 專業

# Developing Academic Writing Ability

## ◎ Academic Writing Style

- Compare the following two paragraphs:

(A) *We're going to* introduce a new method to *you* in this study. We use it to *carry out some* useful operations at a *pretty* high speed. *And you'll see* how a second-degree minimax polynomial approximation is used to *get a good* initial estimate of the reciprocal and the inverse square root values. It also *does* a modified Goldschmidt iteration.

# Developing Academic Writing Ability

## ○ Academic Writing Style

- Compare...

(B) *In this paper, a new method for the high-speed computation of double-precision floating-point reciprocal, division, square root, and inverse square root operations is presented. This method employs a second-degree minimax polynomial approximation to obtain an accurate initial estimate of the reciprocal and the inverse square root values, and then performs a modified Goldschmidt iteration.*

# Developing Academic Writing Ability

- Writing Problems of NNS Writers
  - Less facility of expression (such as academic vocabulary and sentence variety)
  - Process of composition influenced by first language
  - Failure to build links between and among sentences and paragraphs
  - Lack of focus

# Developing Academic Writing Ability

- Writing Problems of NNS Writers
  - Lack of logical presentation
  - Inappropriate register
  - Wordiness
  - Restriction to a simple style



# Developing Academic Writing Ability

## ● Academic Vocabulary

### ● Use Formal Vocabulary

- *They come up with (conceive) a better design, using the new approach.*
- *We can see (perceive) a change in the process.*
- *We'll (We will) present a new model in this paper.*
- *You know how severe the situation was.  
(We realize how severe the situation was.)*

# Developing Academic Writing Ability

- Academic Vocabulary

- Build up Writing Vocabulary

- 1. Learn not only the general meanings of words but their meanings in specialized fields as well

- The study *establishes* that women are more likely to *develop* dementia than men. (MEDICINE)
      - Some people often try to find out how to *crack* software on the web. (COMPUTER)

# Developing Academic Writing Ability

- Academic Vocabulary
  - Build up Writing Vocabulary
    - 2. Learn the register of words
      - *The result is wonderful (significant).*
      - *Problems showed up (emerged) during the process.*

# Developing Academic Writing Ability

- Academic Vocabulary

- Build up Writing Vocabulary

- 3. Learn the collocations of words

- *In this study, an approach is proposed to \_\_\_\_ the **complexity** of the search procedure.*
      - *We \_\_\_\_ the **issue** of computational complexity in Section 4.*

# Developing Academic Writing Ability

- Academic Vocabulary

- Build up Writing Vocabulary

- 4. Learn high-frequency academic vocabulary

- Academic Word List

- <http://www.uefap.net/vocabulary/vocabulary-selecting/vocabulary-selecting-awl>

# Developing Academic Writing Ability

## ○ Special Grammatical Usages

### ○ Voice

#### 1. Active vs. passive

- A supplier *can* greatly *reduce* the changeover cost under just-in-time production.
- The changeover cost *can be* greatly *reduced* under just-in-time production.

# Developing Academic Writing Ability

- Special Grammatical Usages

- Voice

- 2. Choice of voice

- (a) the choice of subject

- Neural networks were used as classifiers to create the knowledge base for the learning system.
        - The researchers used neural networks as classifiers to create the knowledge base for the learning system.

# Developing Academic Writing Ability

- Special Grammatical Usages

- Voice

- 2. Choice of voice

- (b) subject-verb compatibility

- *Flexibility is enabled* by these alternative production routes.
        - *The new device enables* the company to increase productivity.



# Developing Academic Writing Ability

- Special Grammatical Usages

- Voice

- 2. Choice of voice

- (c) thematic development

- A scanner *moves* along the printed text and *photographs* the words. The words *are* then *converted* into electronic signals and *sent* into a minicomputer. The computer *analyzes* the signals according to ....

# Developing Academic Writing Ability

- Special Grammatical Usages

- Tense

- 1. Simple present – for general statements, facts, and beliefs

- *One of the problems in robotics vision **is** obtaining segmentation between overlapping surfaces.*

# Developing Academic Writing Ability

- Special Grammatical Usages

- Tense

- 2. Simple past – for findings restricted to specific studies, or events or actions completed at a fixed time in the past

- *Smith and Cain (2) developed an approach to determine the future scheduling period.*
      - *We compared the optimized states of the five scenarios in a previous study.*

# Developing Academic Writing Ability

- Special Grammatical Usages

- Tense

- 3. Present perfect – for a research area or findings of several studies

- Many studies *have reported* on the effects of computer-assisted instruction.

# Developing Academic Writing Ability

- Special Grammatical Usages
  - Participial Phrases (as adjectives)
    - *Students **arriving late** will not be allowed to enter the lecture hall.*
    - *The results **obtained from the experiment** were very convincing.*

# Developing Academic Writing Ability

- Special Grammatical Usages
  - Participial Phrases (as adverbs)
    - *Realizing the urgency of the situation*, we discuss the serious problem of pollution immediately. (cause)
    - We have collected various types of samples, *ensuring that the input images are suitable for analysis*. (purpose)
    - The TS algorithm proposed here is tested, *using the problem set given in Lee [22]*. (means)

# Developing Academic Writing Ability

- Rhetoric

- Readability

- 1. Given/new principle

- *Consider a supply chain that consists of two suppliers and a customer. The two suppliers sell identical products to the customer, who has a constant demand rate  $D$ . Our assumption of a constant demand rate ....*

# Developing Academic Writing Ability

- Rhetoric

- Readability

- 2. Topic development

- *It frequently happens in manufacturing practice that a **disruption** creates a need for **rescheduling**. Examples of common **disruptions** include .... **Rescheduling** involves .... There is relatively little research on **rescheduling** ....*



# Developing Academic Writing Ability

- Rhetoric

- Readability

- 3. Light/heavy principle

- *\*A number of systems and devices for meeting specific requirements and environments **are available**.*
      - *A number of systems and devices **are available** for meeting specific requirements and environments.*

# Developing Academic Writing Ability

## ○ Rhetoric

### ○ Coherence

#### 1. Links between sentences

- *A survey of the field was made to determine possible **choices**. **They** were then submitted for a feasibility test. (pronoun)*
- *We **assume** that these jobs offer.... There is no loss of generality in **this assumption**. (use of *this*)*

# Developing Academic Writing Ability

- Rhetoric

- Coherence

- 2. Logical connectors

- *\*Bacteria can be destroyed by cutting off their life-support systems. Viruses are hard to kill. Any treatment may also damage the host cell that they attack.*

# Developing Academic Writing Ability

- Rhetoric

- Coherence

- 2. Logical connectors (continued)

- *Bacteria can be destroyed by cutting off their life-support systems. Viruses, **however**, are hard to kill **since** any treatment may also damage the host cell that they attack.*

# Developing Academic Writing Ability

- Rhetoric

- Conciseness

- *\*Prevention measures should be adopted to prevent it to occur.*

*Prevention measures should be adopted.*

- *\*As shown in Fig. 4, it illustrates the parameters....*

*Fig.4 illustrates the parameters....*

# Developing Academic Writing Ability

## ● Rhetoric

### ● Conciseness

- *\*The design which was recommended would make a contribution to market visibility.*

*The **recommended** design would **contribute** to market visibility.*

- *\*There are a number of studies that have focused on nanotech materials and techniques.*

***A number of studies** have focused on nanotech materials and techniques.*

# Writing Research Papers

- ◎ Introduction to Research Papers
  - ◎ Research papers can be regarded as a special genre (文體，文類) which has distinctive informational and linguistic features.
  - ◎ Developing good ability of writing research papers involves three aspects: subject content (專業內容), organization (組織架構), and language use (語言使用).

# Writing Research Papers

## ◎ Introduction to Research Papers

### ◎ Organization

- Abstract (摘要)
- Introduction (序論)
- Methods and Materials (研究方法和材料設備)
- Results (研究結果)
- Discussions and Conclusions (討論和結論)
- References (參考文獻)



# Writing Research Papers

- Abstract
  - Information Structure
    - Background (setting, research topic)
    - Purpose
    - Method
    - Results
    - Conclusion

# Writing Research Papers

- Abstract
  - Analysis

# Writing Research Papers

- Abstract
  - Writing Skills
    - Using compressed structures
      - [研究目的] *This paper describes novel methods of classification [研究方法] using hidden Markov models (HMMs) and decision trees to recognize the ridge structure....*

# Writing Research Papers

- Abstract
  - Writing Skills
    - Highlighting important results and contribution
      - *The predictor proposed **clearly outperforms** the adapted versions of conventional value predictors.*

# Writing Research Papers

- Introduction
  - Information Structure
    - Setting (background/ research topic)
    - Literature review
    - Creation of a research space (Gap)
    - Purpose or feature statement
    - Research method (optional)
    - Major results (optional)
    - Value statement
    - Content to follow

# Writing Research Papers

- ⦿ Introduction
  - ⦿ Analysis

# Writing Research Papers

- Introduction

- Writing Skills

- Making citations: citation focus

- 1. information-prominent

*High-radix digit-recurrence methods  
[13] result in faster but bigger designs.*

*L2 text is less fluent, less accurate, less  
effective and with simpler structure  
(Silva 1993).*

# Writing Research Papers

- Introduction

- Writing Skills

- Making citations: citation focus

- 2. author-prominent

- Smith [15] independently investigated this problem in robotics vision.*

- Schmidt (1994) uses the term 'noticing' to refer to the process of bringing some stimulus into focal attention.*



# Writing Research Papers

- Introduction
  - Writing Skills
    - Making citations: citation organization
      - 1. time sequence : from the earliest to the latest
      - 2. different approaches
      - 3. relevance : from the most distantly related to the most closely related

# Writing Research Papers

- Introduction
  - Writing Skills
    - Making a gap statement
      - *Although much has been described regarding the system, the mechanisms remain poorly understood.*
      - *Little research has used retrospection to investigate the reading process of students and ....*

# Writing Research Papers

- Introduction
  - Writing Skills
    - Writing a purpose statement
      - *In this paper, we address transaction commitment in MDS systems.*
      - *The purpose of this paper is to investigate the issue of the variance using a general multivariate statistical model.*

# Writing Research Papers

- Methods and Materials
  - Information Structure
    - Design of investigation/Purpose
    - Method/Approach/Model/Technique
    - Sampling (optional)
    - Location and time (optional)
    - Criteria/Variables/Conditions (optional)
    - Procedure
    - Materials/Equipment
    - Measurement/Operation

# Writing Research Papers

- Methods and Materials
  - Analysis

# Writing Research Papers

- Methods and Materials
  - Writing Skills
    - Describing the research procedure
      - *At the beginning of the feature extraction process, the skeleton of each pattern is traced from .... Each such curve is approximated by a sequence of line segments, which are then grouped into primitives consisting of .... After this, features are extracted from each primitive, .... Finally, ....*

# Writing Research Papers

- Methods and Materials

- Writing Skills

- Making a definition

- *Let*  $(w1, w2)$  *be* a bigram consisting of consecutive words  $w1$  and  $w2$ .

- We *denote* an observation sequence  $O$  of  $T$  feature vectors *as*

$$O = (o1, o2, ..., ot)$$

- where*  $ot$  is the vector of multimodal features at time  $t$ .

# Writing Research Papers

- Methods and Materials
  - Writing Skills
    - Using impersonal structures: **passive**
      - *The flow net **is analyzed** hierarchically.*
    - Using impersonal structures: **it-structures**
      - ***It was demonstrated that** faults were contained in specific regions [2].*
    - Using impersonal structures:  
**inanimate S. + active V**
      - ***These microarchitectures split** programs into speculative threads.*



# Writing Research Papers

- Results
  - Information Structure
    - Overall description of the investigation
    - Location of figures and tables
    - Presentation of important findings and results
    - Comment on the results

# Writing Research Papers

- Results
  - Analysis

# Writing Research Papers

- Results
  - Writing Skills
    - Locating tables and figures
      - *Table 1 shows a comparison of the asymptotic delays of multipliers constructed by the different networks.*
      - *This causes a drastic reduction of total data cache references ..., as illustrated in Table 11.*

# Writing Research Papers

- Results
  - Writing Skills
    - Indicating significant results
      - *It can be observed from Fig. 14 that the optimized codes can **obtain 21 percent more savings** than the original code on an average.*
      - *It was demonstrated that the model proposed can **greatly improve efficiency**.*

# Writing Research Papers

- Results

- Writing Skills

- Commenting on results

- *It is possible that this difference in time is caused by the experimental conditions.*

- (give a reason)

- *These findings are consistent / accord with those from Smith (3).*

- (compare with another study)

# Writing Research Papers

- Discussions and Conclusions
  - Information Structure
    - Restatement of research questions
    - Explanation and discussion of results
    - Expected vs. unexpected results (optional)
    - Problems (optional)
    - Comparison with other studies
    - Implications, generalizations, and applications
    - Significance and contribution
    - Suggestions for future research

# Writing Research Papers

- Discussions and Conclusions
  - Analysis

# Writing Research Papers

- Discussions and Conclusions

- Writing Skills

- Indicating implication, generalization, or application

- *These results **suggest** that the effect of extra computation in TCOT does not affect....*

- *The “shared segmentation” concept could **be applied to** other arithmetic operations, such as ....*



# Writing Research Papers

- Discussions and Conclusions
  - Writing Skills
    - Comparing results
      - *These results are **in substantial agreement with** those of Bates (2).*
      - *This **confirms** earlier findings by Kain and Quigley (11).*

# Writing Research Papers

- Discussions and Conclusions
  - Writing Skills
    - Indicating significance and contribution
      - *The results show that the developed method is effective, fast, and can thin any symbol in any language.*
      - *The new classification combination can achieve a filtering efficiency of 2.8, with an error rate of only 1.0 percent, ....*

# Suggestions

- Be aware of the differences between English and Chinese.
- Always be formal in academic writing.
- Check whether your text is readable, coherent and concise.
- Always re-read your text and revise.

# Suggestions

- Read and analyze well-written articles from prestigious journals in your field.
- Become sensitive to the information structure and specific language use in each section.
- Follow the style and conventions in your discipline and the specific journal to which you intend to submit your article.

# Q & A