

Scientific Writing in English
— 英语科研论文写作 —

Lecture 16 Friday 13.11.2015
(13.30-15.10pm/7-8.40pm)

Scientific Writing in English
— 英语科研论文写作 —

Volunteers for Note Taking
(Chinese/English)

compiled version to:

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P->So?

O->N?

G->Sp?

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OVERVIEW - Module 2
Unit 3: Problem, Process, Solution

1. General Structure
2. Language Focus: Mid-position Adverbs
3. Procedures and Processes = Methods Part
- 4. Language Focus: Verbs and Agents in the Solution**
- 5. Language Focus: -ing Clauses of Result**
- 6. Language Focus: Indirect Questions**

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-> sometimes by+process word not sufficient information

Example:

Teaching can be improved **by in-service training**.

-> To be extended for greater **precision**

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-> sometimes by+process word not sufficient information

Example:

Teaching can be improved **by in-service training**.

To be extended for greater **precision:**


Teaching can be improved by requesting teachers to attend a range of short courses throughout their entire careers.

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-> sometimes by+process word not sufficient information

Example:

Bacteria found in meat can be killed **by radiation**.




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-> sometimes by+process word not sufficient information

Example:

Bacteria found in meat can be killed by radiation.

Bacteria commonly found in meat can be rendered harmless by **radiating** such meat products with UV light, **killing** these microorganisms in the process.




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-> sometimes by+process word not sufficient information

Example:

The spread of infectious diseases can be controlled **by vaccinations**.



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-> sometimes by+process word not sufficient information

Example:

The spread of infectious diseases can be controlled by vaccinations.

The spread of infectious diseases can be controlled **by applying or administering** antigenic material, also called vaccines, upon which immunity to a specific pathogen is being developed.

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Flow of Ideas in a Process Description

- * in Unit 1, concept of flow introduced (use of sentence connectors, summary words)
- * another way of achieving good flow of ideas by combining/linking verb phrases

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Flow of Ideas in a Process Description

Example

These strains **were** then separately **grown** and **harvested**. Harvested virus **was purified** and **inactivated**. Finally, the inactive virus strains **were blended** together with a carrier fluid and **dispensed** into vials.

CAUTION: prevent ambiguities

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Flow of Ideas in a Process Description

1. The liquid is collected and kept for 24 hours.
2. The sample is collected and stored in a sterile container.
3. In consumer research, individuals are selected and interviewed by telephone.

Precise enough?

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Flow of Ideas in a Process Description

1. The liquid is collected, and **then** kept for 24 hours.
2. The sample is collected, and **then** stored in a sterile container.
3. In consumer research, individuals are selected, and **then** interviewed by telephone.

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Flow of Ideas in a Process Description

TASK 28: Treatment of water birds after an oil spill

Which passage "flows" better?

TASK 28A

19.20pm



<http://www.wenjuan.com/s/n6RRBf/>

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Flow of Ideas in a Process Description

TASK 28A: Treatment of water birds after an oil spill

Time: 10 min

Flow of Ideas in a Process Description

Version A

1. Once a bird has been brought to a rehabilitation center, basic procedures are followed.
2. The bird is sedated, if necessary.
3. The bird is examined to detect broken bones, cuts, or other injuries.
4. Oil is flushed from its eyes and intestines.
5. Heavily oiled birds are then wiped with absorbent cloths to remove patches of oil.
6. Stomach-coating medicines may be administered orally to prevent additional absorption of oil inside the bird's stomach.
7. The bird is warmed.
8. It is placed in a quiet area.
9. Curtains are hung around the area to limit the bird's contact with people.

Flow of Ideas in a Process Description

Version B

1. Once a bird has been brought to a rehabilitation center, basic procedures are followed.
2. First, the bird is sedated, if necessary, and examined to detect broken bones, cuts, or other injuries.
3. Next, oil is flushed from its eyes and intestines.
4. Heavily oiled birds are then wiped with absorbent cloths to remove patches of oil.
5. Stomach-coating medicines may be administered orally to prevent additional absorption of oil inside the bird's stomach.
6. The bird is then warmed and placed in a quiet area.
7. Finally, curtains are often hung around the area to limit the bird's contact with people.

Flow of Ideas in a Process Description

Version B

1. **Once** a bird has been brought to a rehabilitation center, basic procedures are followed.
2. **First**, the bird is sedated, if necessary, and examined to detect broken bones, cuts, or other injuries.
3. **Next**, oil is flushed from its eyes and intestines.
4. Heavily oiled birds are **then** wiped with absorbent cloths to remove patches of oil.
5. Stomach-coating medicines may be administered orally to prevent additional absorption of oil inside the bird's stomach.
6. The bird is **then** warmed and placed in a quiet area.
7. **Finally**, curtains are often hung around the area to limit the bird's contact with people.

Flow of Ideas in a Process Description

Version B

1. Once a bird has been brought to a rehabilitation center, basic procedures are followed.
2. First, the bird **is sedated**, if necessary, and **examined** to detect broken bones, cuts, or other injuries.
3. Next, oil is flushed from its eyes and intestines.
4. Heavily oiled birds are then wiped with absorbent cloths to remove patches of oil.
5. Stomach-coating medicines may be administered orally to prevent additional absorption of oil inside the bird's stomach.
6. The bird is then **warmed** and **placed** in a quiet area.
7. Finally, curtains are often hung around the area to limit the bird's contact with people.

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Flow of Ideas in a Process Description

* good flow achieved through use of **time adverbials**

once, first, next, then, finally

-> time adverbs establish sequence of events

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Participles

* flow can also be maintained by taking **the -ed participle** in the passive construction and using it as an **adjective**

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Participles

First, the three most common strains of flu virus were *identified*. The **identified** strains were then separately grown and *harvested*. **Harvested** virus was purified and *inactivated*. Finally, the now **inactivated** virus strains were blended together with a carrier fluid and dispensed into vials.

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Participles

- > change from **passive verb to adjective** creates strong connection between sentences
- > indicates newly acquired characteristic of the virus
- > as a result of the process, virus can now be described as
 - harvested
 - inactivated
 - purified

Participle

- > a word formed from a verb (e.g., *going, gone, being, been*) and used as an adjective
- (e.g., *working woman, **burned** toast*) or a noun (e.g., *good breeding*).
- > In English, participles are also used to make compound verb forms (e.g., *is going, has been*).

(participle: 分词)

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TASK 28B

Improve the flow of ideas for 4 process descriptions

TASK 28B

Example: Phytoremediation—using plants to remove metal from the soil

The plants are selected. The plants are planted at a particular site based on the type of metals present and other site conditions. The plants are allowed to grow for some time. The plants are harvested. They are either incinerated or composted to recycle the metals. →

The plants *are selected and planted* at a particular site based on the type of metals present and other site conditions. *After* the plants have been allowed to grow for some time, *they are harvested* and either incinerated or composted to recycle the metals.

TASK 28B

Group work (**Each Sector one topic**)

Time: 20 min

Oil spill cleanup (Sector 1)

The oil is skimmed from the surface using a boom. The oil is pumped into a tank for recycling.

Wine making (Sector 2)

The grapes are harvested. The grapes are crushed to release the pulp and seeds. The grapes are fermented for three weeks.

Tempering glass (Sector 3)

The glass is cut to size. It is inspected to determine if it has any imperfections. The glass is heated to over 600°C. The glass is cooled in a step known as quenching.

Coronary bypass surgery (Sector 4)

A vessel is taken from the leg. The vessel is grafted to the aorta and the coronary artery beyond the narrowed area. The vessel allows blood to flow to the heart muscle.

TASK 28B



<http://www.wenjuan.com/s/nueYfg/>

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Reminder

* in **Methods** part of a manuscript: passive voice + past tense

First, the three most common strains of flu virus **were identified**.
Strains **were** then separately grown and harvested. Harvested virus
was purified and inactivated. Finally, the inactive virus strains **were**
blended together with a carrier fluid and dispensed into vials.



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Language Focus: Verbs and Agents in the Solution

-> NO agent

-> it is clear that it was you and your co-authors who did the work

-> use of passive voice AND past tense



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Active Voice in Process Descriptions?

- * many natural processes that take place without human intervention
- * if a process description employs verbs that indicate a change of state, such as: expand, rise, cool, form

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Active Voice in Process Descriptions

Examples:

The sun rises in the east, and sets in the west.

Most metals expand and contract with variations in temperature.

The moon rotates around the earth.

-> (active voice + present tense)

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Active Voice in Process Descriptions

- * active voice also used to make generalizations about human society

Example:

When demand increases, prices are likely to rise.

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Active Voice in Process Descriptions

* nowadays also used for human activities, especially in the beginning of each **Results section**

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Active Voice in Process Descriptions

Example 1

To investigate whether MDSCs modulate B-cell responses *in vivo*, **we first tested** how MDSCs affect the activation state of splenic B cells *in vivo*.

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Active Voice in Process Descriptions

Example 2

To analyse the impact of cell-cell contact on IgA production, **we next assessed** the presence of cytokines in the supernatants of our co-cultures.

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Compare active and passive voice

To analyse the impact of cell-cell contact on antibody production, **we next assessed** the presence of cytokines in the supernatants of our co-cultures.

Next, to analyse the impact of cell-cell contact on antibody production, the presence of cytokines in the supernatants of our co-cultures **was assessed**.

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6. Language Focus: Indirect Questions

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Cause-and Effect Statements

- * expressions that highlight cause and effect help reader to understand problem and solution
- * creating of good flow through various structures

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Cause-and Effect Statements

Examples

An increase in demand is likely to cause a rise in prices.

Increases in demand **usually lead to** price increases.

Demand increases; **as a result**, prices tend to rise.

Increases in price are **often caused by** increases in demand.

Cause-and Effect Statements

Example 2

The databases are those established by the major abstracting and indexing services. As a result, these services have tended to preselect papers that are written in English, and originate in the Northern Hemisphere. For these reasons, **it is probable** that research in languages other than English is somewhat underrepresented.

->

These services have tended to preselect papers that are written in English and originate in the Northern Hemisphere, **thus causing** research in languages other than English to be somewhat underrepresented.

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Cause-and Effect Statements

Example 3

However, there is also evidence that the dominance of English **has been causing** a counterreaction.

->

However, as researchers recognize the increasing domination of English, they are having second thoughts, **thus creating** a counterreaction.

Causes and Effects

Example 3

When the cold air from the Pacific Ocean's Humboldt Current mixes with the warm coastal air, a thick, wet fog, called camanchaca by the Andes Indians, **forms** along with clouds.

->

The cold air from the Pacific Ocean's Humboldt Current mixes with the warm coastal air, **resulting in** the formation of clouds and a thick, wet fog, called camanchaca by the Andes Indians.

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Cause-and Effect Statements

-> all three examples use -ing forms of verbs

causing

creating

resulting in

-> -ing clause very useful for problem-solution texts, as they improve the flow of cause-and-effect statements.

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Language Focus: -ing Clauses of Result

* -ing useful **alternative** to sentence connectors such as therefore/as a result

* Caution: as mentioned before, -ing forms should not be overused (1-2 per sentence, but not 3,4, or 5!)

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Language Focus: -ing Clauses of Result

Example 1

The magma flows into the pores of the rocks; **as a result**, the rocks rupture.

->

The magma flows into the pores of the rocks, **thus causing** them to rupture.

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Language Focus: -ing Clauses of Result

Example 2

A current is sent through the material. **As a result**, the electrons are polarized.

->

A current is sent through the material, **polarizing** the electrons.

-> -ing form often used in manuscript writing, use with caution!

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Language Focus: -ing Clauses of Result

- * very useful structure in **problem-solution** texts
- * can be used to express next step in the process, a resulting problem/solution
- * very good connection -> **good flow**

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Language Focus: -ing Clauses of Result

-> applicable to all three categories:

1. Process: Prices rise, thus leading to a drop in demand.
2. (Resulting) Problem: Prices rise, thus increasing the chance of hyperinflation.
3. (Resulting) Solution: Prices rise, thus increasing earnings that can then be invested in the enterprise.

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Language Focus: -ing Clauses of Result

TASK 30

Example:

Sustainable development would require industry to reduce pollution output and resource use; as a result, technical innovation will be stimulated.

Sustainable development would require industry **reducing** pollution output and resource use; as a result, technical innovation will be stimulated.

Task 30