

Academic English: Writing a Research Article

Natural Sciences

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Leen De Boom



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- Arts, Humanities and Law (Catherine Verguts)
- (Bioscience) Engineering (Leen De Boom and Katrien L. B. Deroey)
- Life Sciences and Medicine (Katrien L. B. Deroey, in collaboration with Dominique Neyts)
- Natural Sciences (Leen De Boom)
- Social and Behavioural Sciences (Catherine Verguts)

A teacher's manual is available upon request.

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EXERCISES

INTRODUCTION: YOU AS A WRITER

Exercise 1

First, answer these questions individually. Then discuss in groups.

1. What type of texts have you written so far (for example, research articles, letters and emails, scholarly assignments and progress reports)? What type of text will you be writing in the near future?
2. What is your attitude towards writing (negative – neutral – positive)? Do you know why? What exactly do you (dis)like about writing?
3. What have you been praised for or criticized for in the past as a writer?
4. What do you think are the main differences between writing in your mother tongue and in English?
5. What would you like to learn about writing research articles? In other words, what do you expect from this course?

Session aims

- Writing in a sufficiently formal register
 - Adopting an impersonal style
 - Writing clearly and concisely
 - Structuring paragraphs and sentences
 - Clarifying the relationship between points

 - Language focus: Relative clauses
-



To achieve fluent academic discourse, your text needs the correct tone, conciseness and a good flow. These three criteria will be discussed in more detail in this unit.

1.1. Managing Tone

A. Formality

Exercise 1

Read the following passage which is taken from an introduction. Underline the formal elements and complete the scheme below the text.

(1) Catalytic asymmetric hydrogenation is one of the most widely used and reliable catalytic methods for the preparation of optically active compounds. **(2)** Some attractive features of this transformation include high enantioselectivity, low catalyst loadings, essentially quantitative yields, perfect atom economy, and mild conditions. **(3)** For these reasons, asymmetric hydrogenation is the most utilized synthetic asymmetric methodology in industry, and forms the critical transformation in several commercial scale processes. **(4)** Logically, discovery of high-performance chiral catalysts crucially depends on the development of appropriate ligands. **(5)** This field is in constant development, with new generations of ligands appearing every year.

formal elements	examples

Formality is achieved by:

→ Formal vocabulary

- Avoid colloquial vocabulary (words and expressions used in everyday spoken language) (exercise 2);
- Limit the use of run-on expressions such as ‘and so forth’ and ‘etc.’.

→ Formal grammatical constructions

- Do not contract words;
- Be careful about using imperatives and direct questions;
- Replace phrasal verbs by single-word verbs (exercise 3);
- Place adverbs with the verb (exercise 4);
- Write in a more impersonal style (exercise 5).



Reference section: Formality

Exercise 2

Replace the colloquial phrases in bold by more formal language.

1. During island growth, the increase of the strain concentration at the island edge makes it **more and more** difficult for adatoms to reach the island, which leads to the formation of homogeneously sized islands.
2. **As far as we know**, these S-matrix elements are the only rigorously defined quantities of the theory.
3. The resulting plasma oscillations and screening differ **a lot** from those in bulk media.
4. However, there is **not very much** research dealing with these fundamentals of ESD.
5. **We can see that** all experimental points fall slightly to the right of the curve.

6. Among the general theoretical models **that we can apply** to a wide range of molecules, the G2, CBS, and B3LYP-DFT models have been the most successful.
7. This paper **is about** the statistical mechanics of the isotropic and the weakly anisotropic quadratic-layer antiferromagnet.
8. The system **is put into practice** both in software and in reconfigurable hardware.

Exercise 3

Choose a verb from the list to replace the less formal words in bold. You may have to change the form/tense of the verb.

clarify	reduce	enhance	facilitate
constitute	enable	expedite	offer
attribute	arise	reduce	investigate

1. The primary advantage of this design is that it **makes** the synthesis of ac wave forms **possible** without the uncertainty introduced by switching transients.
2. [Title:] Intracellular sequestration of sodium by a novel Na⁺/H⁺ exchanger in yeast **is made better** by mutations in the plasma membrane H⁺-ATPase.
3. The silyl protecting group also had the added benefit of **making** the polarity of the desired compound **smaller** and **making** purification by column chromatography **easier**.
4. We **looked into** the relationship between the reflection efficiency of a holographic polymer dispersed liquid crystal (HPDLC) and the liquid-crystal/polymer phase separation structure.

5. In this case, the mechanism of the THz radiation **was put down** to the carrier motion in the surface depletion electric field.
6. It is well known from optics that the speed of light in a transparent medium **is made smaller** by a factor of n (the index of refraction) as compared with vacuum.
7. At this stage we are unable to **come up with** a convincing explanation for this observation and can merely speculate that ion source conditions favouring production of clusters may also lead to the formation of warmer clusters.
8. Many of the discrepancies in the meanings of vulnerability **come** from different epistemological orientations and subsequent methodological practices.
9. These elements **make up** almost 37.5% of the mouse genome.
10. The short length of the sequence is particularly important for **speeding up** chemical synthesis using Fmoc chemistry.
11. A large number of studies have been conducted on the structure of Fe-N films **to make** the origin of the enhanced magnetic moment **clear**.



Language focus: Adverbial position

In academic writing, single adverbs tend to be placed with the verb (midposition). If there is no auxiliary, the adverb in midposition is placed before the main verb.

Whereas mammalian enzymes use UDP-glucuronic acid, the plant enzymes typically **use** UDP-glucose in the transfer reactions.

When the verb 'be' is on its own, the adverb comes after it.

These observations **are** generally consistent with results obtained from Ca²⁺ binding studies on the purified integrin (18) and synthetic peptides corresponding to the individual loops of each EF-hand (19).

The adverb is usually placed after the first auxiliary verb, except for the adverb of manner. Compare:

The surface sol-gel process (SSP) **was** originally **developed** by Kunitake and co-workers. (*after the first auxiliary*)

The interaction between small bioactive ligands with proteins **has long been acknowledged** as one of the main topics of molecular biology. (*after the first auxiliary*)

The Vilsmeier dimethylformamide-thionyl chloride reagent¹³ provided halo derivatives which **could be** successfully **converted** to the 7,8-dihydro-7-thiones. (*after ALL auxiliaries*)



Reference section: Adverbial position

Exercise 4

Find a single adverb to replace the words in bold and place it with the verb.

1. **In general**, the curves of gain versus excitation rate have downward curvature for photon energies near the gain peak.
2. All symmetric resonances were assumed to be p-wave for our analysis, but **after that** they were analysed as s-wave to test whether the asymmetry induced would have been detectable in the present data.
3. **In essence**, the underlying geometries are determined by at least two stronger primary interactions in all complexes.
4. With the flow ratio decreasing from 16.5, Si peaks display asymmetrical broad peaks which are shifted to a lower binding energy **all the time**.