2nd year Licence, Ecology/Biological sciences

Scientific English

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Scientific English: introduction

People often talk about English as a global language. With more than 350 million people around the world speaking English as a first language and more than 430 million speaking it as a second language, there are English speakers in most countries around the world.

People often call English the language of sciences, so if your ambitions lie in science (including natural sciences), you can't neglect English either. Much of the technical terminology is based on English words, and if you want to learn about the latest developments and discoveries from around the world, you'll read about them in journals and research reports published in English, no matter whether the scientists who wrote them are from China or Algeria. And, of course, with good conversational English, you'll be able to network and make important contacts at conferences and seminars.

English also opens doors in the academic world. Of course, if the best program in your field is in an English-speaking country, English will give you the opportunity to study with the top scholars. Western universities are attracting more and more visiting scholars, students from all around the world, and their common working language is English. As well as studying and teaching, attending international conferences and publishing in foreign journals are some of the key steps to success in academia. In order to speak at these conferences or publish in these journals, excellent English is essential.

Writing A Research Report

1. Structure

When presenting a research report, it is conventional to present the piece using a certain style and structure.

The writing should be **formal**. In other words, it should use precise vocabulary and avoid slang or colloquial phrases. The meaning should be as clear as possible, using short sentences.

The report should begin with the ***title***, which should be clearly written to describe the work. For example: 'A Study to test the effectiveness of Massage in alleviating the pain of a Migraine.'

Next should be the ***aim*** of the piece, which should relate to the title. 'Aim – To identify which forms of massage help migraine sufferers.'

The third element will be the ***hypothesis***, or the idea which is being considered in the report. 'Hypothesis - All Forms of Massage Provide Some Relief to Migraine Sufferers.'

Next comes the ***materials or resources*** used in the experiment on which the report is based. These should be presented in a simple list. If a risk assessment was used, that should be included next.

The report is now ready to get to the main parts. Firstly, using the ***past tense***, the method of any research is reported. Next, a table, diagram or graph will show the ***results***. Finally, the ***conclusion*** will be written, which will include a statement regarding the extent of the accuracy of the hypothesis.

2. IMRaD

"**IMRaD**" format refers to a paper that is structured by four main sections: **I**ntroduction, **M**ethods, **R**esults, and **D**iscussion. This format is often used for scientific reports as well as for reporting any research in natural sciences.

2.1. Introduction - *Make a case for your research*

The introduction explains why this research is important or necessary or important. Begin by describing the problem or situation that motivates the research. Move to discussing the current state of research in the field; then reveal a "gap" or problem in the field. Finally, explain how the present research is a solution to that problem or gap. If the study has hypotheses, they are presented at the end of the introduction.

2.2. Methods - *What did you do?*

The methods section tells readers how you conducted the study. It includes information about your population, sample, methods, and equipment. The "gold standard" of the methods section is that it should enable readers to duplicate your study. Methods sections typically use subheadings; they are written in ***past tense***, and they use a lot of passive voice.

2.3. Results - *What did you find?*

In this section, you present your findings. Typically, the Results section contains only the findings, not any explanation of or commentary on the findings. Results sections are usually written in the ***past tense***.

2.4. Discussion - *What does it mean?*

In this section, you summarize your main findings, comment on those findings, and connect them to another research. You also discuss limitations of your study, and use these limitations as reasons to suggest additional, future research.

3. Language

For English scientific writing, there are many phrases which can be used to connect various sections of the piece. These will help the flow of the writing, and also ensure that it remains formal in style. Such phrases can include:

On the other hand - means in contrast. For example: 'Our results largely indicated that massage gave temporary relief. On the other hand, these results were not found in 20% of cases.

In conclusion - this phrase is used at the end of a section. 'In conclusion, our results demonstrate that massage should be considered as a means of treatment by specialists.'

However - this can be used in the same way as 'on the other hand.' 'The massage was successful initially, however, we discovered that the benefits lessened in time.

It should be noted that… - A formal way of stressing a point. 'While our hypothesis was largely proved to be correct, it should be noted that our sample included very few 18-30-year olds, who could react differently.'

4. Grammar

There are two tenses in English - past and present.
The past tense in English is used:

- to talk about the past
- to talk about **hypotheses**
- for politeness.

There are four past tense forms in English:

Past simple	I worked
Past continuous	I was working
Past perfect	I had worked
Past perfect continuous	I had been working

Example of Past tenses conjugation of the verb to study.

Simple past		**Past continuous**	
I	studied	**I**	was studying
you	studied	**you**	were studying
he/she/it	studied	**he/she/it**	was studying
we	studied	**we**	were studying
you	studied	**you**	were studying
they	studied	**they**	were studying
Past perfect		**Past perfect continuous**	
I	had studied	**I**	had been studying
you	had studied	**you**	had been studying
he/she/it	had studied	**he/she/it**	had been studying
we	had studied	**we**	had been studying
you	had studied	**you**	had been studying
they	had studied	**they**	had been studying

Language functions in scientific English

1. Agreeing and Disagreeing

Agreeing and disagreeing are typical elements of spoken English but may also appear in scientific writing. When writers want to compare their findings with those of other scientists, they may have to express their agreement or disagreement. For **example**: *These results agree with the findings of X's research …*

1.1. expressing agreement

- We entirely agree with his views on …
- We are in complete agreement with …
- We would (strongly) endorse X's opinion on …
- Our findings support those of …
- We would agree with X in principle, but …
- By and large, we accept what X says, but …

1.2. expressing disagreement

- We completely disagree with X on this point.
- We are in total disagreement with …
- We are not at all convinced by X's argument that …
- We have to say that X's argument is somewhat unconvincing.

2. Classifying

Classifying means allocating an object or term to a class of objects or terms which has already been established.

3. Comparing

Comparing means putting two or more objects, facts or ideas together and stating in what ways they are similar or dissimilar. The two phenomena must be comparable, that is, they must have some characteristics in common.

Comparing two things is a fairly simple logical operation. Nevertheless, there is a wide variety of phrases and sentence structures that can be used to express different kinds of comparison.

3.1. Similarity

When you want to emphasise the similarity between two things, you can use the following sentence patterns:

A	is are should be	about / almost / roughly / essentially the same as	B
		similar to	
		like	
		equal to	
		no different from	
	can be	compared directly to	
A and B	are	identical	in every respect
		the same	in most respects in that …
		alike	
		similar	

3.2. Dissimilarity

Dissimilarity basically means that one phenomenon is either more or less than another in one or several respects. The following structures can be used:

A	is	(much) (far) (substantially) (somewhat) (rather) (slightly)	adjective + *-er* *more* + adjective *less* + adjective	than	B
		(almost)	*as* + adjective	as	
	Is not	(quite)	*so* + adjective		

3.3. Superiority and inferiority

This means saying how something is better or worse than something else, with regard to particular features. Phrases you can use include:

A	Is	superior to inferior to	B	*in a certain way* *from a certain point of view* *with regard to …* *as regards …*		
				in being *in that it is* *inasmuch as it is*		*more* + adjective *less* + adjective
				In	*giving* *showing* *exhibiting*	*more* + noun *greater* + noun *less* + noun

Some useful phrases for English scientific writing

Introduction

Recent researches have revealed that __

A common strategy used to study __ is to __

In the past several decades, __ have played an important role in __

The main problem is that __

This problem has attracted more attention in the field of __

Only a few studies have shown __

However, __ has rarely been studied directly.

Moreover, few studies have focussed on __

Recently, a more general solution has been proposed for this problem.

For this study, it was of interest to investigate __

The aim of this work is to __

The ultimate goal is to produce a __

This research has made a number of significant contributions to the field of __

Literature review

The literature review shows that __

Several studies suggest that __

A number of questions regarding __ remain to be addressed.

Historically, there has been a great deal of confusion in the literature regarding __

More specific research questions will be introduced and investigated in __

A critical open question is whether __

Materials and methods

A __ test was used to determine the significance of data

However, according to our data __

The evaluation of the data presented in this work leads to __

Statistical analyses were performed by using the __

For the current work, it is sufficient to point out that __

Results might be sufficient, especially in __

Results and discussion

Our results demonstrated that __

We showed that __

This analysis found evidence for __

When comparing our results to those of older studies, it pointed out that __

A popular explanation is that __

This is particularly important when investigating __

Alternatively, it could simply mean that __

As discussed, this is due to the fact that __

Conclusion

The findings of this study can be understood as __

On this basis, we conclude that __

This is an important finding in the understanding of the __

Regardless, future research could continue to explore __

Future research should further develop and confirm these initial findings by __

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