

the words and phrases that you think could be used in the seven areas above.

A full list of useful language can be found on the next pages. This includes all the appropriate words and phrases you highlighted along with some other common ones. Read through them and check the meaning of any you don't know in the dictionary. This list will be useful for many years.

#### 2.4.2 Vocabulary for the Methodology section

##### 1. PROVIDE A GENERAL INTRODUCTION AND OVERVIEW OF THE MATERIALS/METHODS and GIVE THE SOURCE OF MATERIALS/EQUIPMENT USED

Some of the vocabulary you need for this is in the Introduction vocabulary list; for example, many of the verbs that describe what you did/used can be found there.

These verbs fall into three categories: the first includes general verbs related to academic research, such as *attempt, consider, conduct, determine, investigate, report, suggest, verify*, and most of these can be found in the Introduction vocabulary list. The second category contains verbs that specify what you did, such as *calculate, extract, isolate, formulate, incorporate, modify, plot, simulate*, and these can be found in the vocabulary list below. The third category includes verbs which are specific to your field and your research, but which are not useful in other fields, for example *clone, dissect, isotope, infuse*. Also try:

all (of)	(the) tests	is/are commercially available
both (of)	(the) samples	was/were acquired (from/by)
each (of)	(the) trials	was/were carried out
many (of)	(the) experiments	was/were chosen
most (of)	(the) equipment	was/were conducted
the majority(of)	(the) chemicals	was/were collected
	(the) models	was/were devised
	(the) instruments	was/were found in
	(the) materials	was/were generated (by)
		was/were modified
		was/were obtained (from/by)

		was/were performed (by/in) was/were provided (by) was/were purchased (from) was/were supplied (by) was/were used as supplied was/were investigated
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*Here are some examples of how these are used:*

- **The impact tests used in this work** were a modified version of...
- **All reactions** were performed in a 27 ml glass reactor...
- **All cell lines** were generated as previously described in...
- **In the majority of the tests**, buffers with a pH of 8 were used in order to...
- **Both experiments** were performed in a greenhouse so that...
- The substrate **was obtained from** the Mushroom Research Centre...
- SSCE glass structures **were used** in this study to perform...
- The cylindrical lens **was obtained from** Newport USA and is shown in Fig. 3.
- **The material investigated** was a standard aluminium alloy; **all** melts were modified with sodium.
- Topographical examination **was carried out** using a 3-D stylus instrument.
- **The experiments were conducted** at a temperature of 0.5°C.

## 2. SUPPLY ESSENTIAL BACKGROUND INFORMATION

As well as describing standard procedures and techniques you may need to describe the equipment/apparatus or instrument you used or constructed. In order to do this accurately you need good control over the language of spatial location. Make sure you know how to use the words/phrases below. If you are not sure, write down the dictionary definition and use a concordance sampler (which you can find on the Internet) to see how they are used.

opposite	facing		
out of range (of)	within range (of)		
below	under	underneath	
above	over	on top (of)	
parallel (to/with)	perpendicular (to)	adjacent (to)	
on the right/left	to the right/left		
(to) bisect	(to) converge	(to) intersect	
near side/end	far side/end		
side	edge	tip	end
downstream (of)	upstream (of)		
boundary	margin	border	
on the front/back	at the front/back	in the front/back	in front (of)
higher/lower	upper/lower	inner/outer	
horizontal	vertical	lateral	
circular	rectangular	conical	
equidistant	equally spaced		
on either side	on both sides	on each side	
is placed	is situated	is located	occupies
is mounted (on)	is coupled (onto)	is fastened (to)	is positioned
is aligned (with)	is connected (to)	is fixed (to)	is embedded
extends	is surrounded (by)	is fitted (with)	is encased (in)
is attached to	is covered with/by	is joined (to)	

*Here are some examples of how these are used:*

- Porosity was measured **at the near end and at the far end** of the polished surface.
- The compression axis **is aligned with** the rolling direction...
- The source light was polarised **horizontally** and the sample beam can be scanned **laterally**.
- The mirrors **are positioned near** the focal plane.
- Electrodes comprised a 4 mm diam disk of substrate material **embedded in** a Teflon disk of 15 mm diam.

- The intercooler **was mounted on top of** the engine...
- The concentration of barium decreases **towards the edge**...
- Similar loads were applied to **the front and side** of the box...
- A laminar flow element **was located downstream of** the test section of the wind tunnel...

In which sentence(s) below was the table closest to the wall?

- The table was placed against the wall.*
- The table was placed next to the wall.*
- The table was placed flush with the wall.*
- The table was placed in contact with the wall.*
- The table was placed right against the wall.*
- The table was placed alongside the wall.*

In which sentence(s) below was the clock closest to the door?

- The clock was located just above the door.*
- The clock was located slightly above the door.*
- The clock was located immediately above the door.*
- The clock was located directly above the door.*
- The clock was located right above the door.*

Note that *half as wide (as) = half the width (of)*; *half as heavy (as) = half the weight (of)*; *twice as long (as) = twice the length (of) and twice as strong (as) = twice the strength (of)*. Also note that *with/having a weight of 20 kg = weighing 20 kg and with/having a width/length of 20 cm = 20 cm wide/long*.

### 3. PROVIDE SPECIFIC AND PRECISE DETAILS ABOUT MATERIALS AND METHODS

These verbs fall into three categories: the first includes general verbs used in academic research, such as *attempt, consider, conduct, determine, investigate, report, suggest, verify*, and these can be found in the Introduction vocabulary list (Section 1.4). The second category contains technical verbs which are specific to your field and your research, but which are not useful

in other fields, for example *anneal, calibrate, centrifuge, dissect, fertilise, ionise, infuse*. These will not be given here because they are not generally useful. The third category is a set of less technical verbs that specify what was done or used, such as *calculate, extract, isolate, formulate, incorporate, modify, plot, simulate*. These usually occur in the passive (*was/were isolated*) and can be found in the vocabulary list below.

was adapted	was divided	was operated
was added	was eliminated	was optimised
was adopted	was employed	was plotted
was adjusted	was estimated	was positioned
was applied	was exposed	was prepared
was arranged	was extracted	was quantified
was assembled	was filtered	was recorded
was assumed	was formulated	was regulated
was attached	was generated	was removed
was calculated	was immersed	was repeated
was calibrated	was inhibited	was restricted
was carried out	was incorporated	was retained
was characterised	was included	was sampled
was collected	was inserted	was scored
was combined	was installed	was selected
was computed	was inverted	was separated
was consolidated	was isolated	was simulated
was constructed	was located	was stabilised
was controlled	was maintained	was substituted
was converted	was maximised	was tracked
was created	was measured	was transferred
was designed	was minimised	was treated
was derived	was modified	was varied
was discarded	was normalised	was utilised
was distributed	was obtained	

## 4. JUSTIFY CHOICES MADE

because* by doing..., we were able to chosen for (+ noun) chosen to (+ infinitive) for the purpose of (+ -ing or noun)** for the sake of (+ -ing or noun) in an attempt to (+ infinitive) in order to (+ infinitive) it was possible to (+ infinitive) offer a means of (+ -ing) one way to avoid... our aim was to (+ infinitive)	provide a way of (+ -ing) selected on the basis of... so as to (+ infinitive) so/such that so (+ -ing ) thereby (+ -ing ) therefore* thus (+ -ing) to (+ infinitive) to take advantage of which/this allows/allowed <i>etc.</i> with the intention of (+ -ing)
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\*See Section 1.2.2 for other examples of signalling language

\*\*See box below for infinitives, -ing forms and noun forms of useful verbs. Ø indicates that a noun form is not available or is not common in this type of structure

INFINITIVE	-ING FORM	NOUN FORM
achieve	achieving	achievement
allow	allowing	Ø
assess	assessing	assessment
avoid	avoiding	avoidance
compensate for	compensating for	compensation for
confirm	confirming	confirmation
determine	determining	determination
enable	enabling	Ø
enhance	enhancing	enhancement
ensure	ensuring	Ø
establish	establishing	establishment
facilitate	facilitating	facilitation

guarantee	guaranteeing	guarantee
identify	identifying	identification
improve	improving	improvement
include	including	inclusion
increase	increasing	increase
limit	limiting	limitation
minimise	minimising	∅
obtain	obtaining	∅
overcome	overcoming	∅
permit	permitting	∅
prevent	preventing	prevention
provide	providing	provision
reduce	reducing	reduction
remove	removing	removal
validate	validating	validation

*Here are some examples of how these are used:*

- **To validate** the results from the metroscale model, samples were collected from all groups.
- The method of false nearest neighbours was selected **in order to determine** the embedding dimension.
- **For the sake of** simplicity, only a single value was analysed.
- **By partitioning** the array, all the multipaths could be identified.
- Zinc oxide was drawn into the laminate **with the intention of** enhancing delaminations and cracks.
- **The advantage of** using three-dimensional analysis was that the out-of-plane stress field could be obtained.
- **Because** FITC was used for both probes, enumeration was carried out using two different slides.
- The LVDTs were unrestrained, **so allowing** the sample to move freely.
- The cylinder was constructed from steel, **which avoided** problems of water absorption.

## 5. INDICATE THAT APPROPRIATE CARE WAS TAKEN

Most of the items in the box below are in adverb form, but they also occur in adjective form (*e.g. accurate*).

accurately	every/each	immediately	rigorously
always	exactly	independently	separately
appropriately	entirely	individually	smoothly
at least	firmly	never	successfully
both/all	frequently	only	suitably
carefully	freshly	precisely	tightly
completely	fully	randomly	thoroughly
constantly	gently	rapidly	uniformly
correctly	good	reliably	vigorously
directly	identical	repeatedly	well

*Here are some examples of how these are used:*

- A mechanical fixture was employed to hold the sonic horn **firmly** in place.
- After being removed, the mouse lungs were frozen and thawed **at least** three times.
- The specimen was monitored **constantly** for a period of 24 hours.
- They were then placed on ice for **immediate** FACS analysis.
- **Frequent** transducer readings were taken to update the stress conditions smoothly.
- The samples were **slowly and carefully** sheared to failure.

## 6. RELATE MATERIALS/METHODS TO OTHER STUDIES

There are three ways in which you might want to relate your materials/methods to those used in other studies.

**Option 1:** The procedure/material you used is **exactly the same as** the one you cite.



according to as described by/in* as explained by/in as in as proposed by/in	as reported by/in as reported previously as suggested by/in can be found in details are given in	given by/in identical to in accordance with the same as that of/in using the method of/in
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\**by* and *of* are usually followed by the name of the researcher or research team (*by Ross* or *using the method of Ross et al.*) and *in* is usually followed by the work (*in Ross et al. (2003)*). Another option is simply to give the research reference at the appropriate place in the sentence, either in brackets or using a superscript number.

**Option 2:** The procedure/material you used is **similar to** the one you cite.

a (modified) version of adapted from based in part/partly on based on essentially identical in line with in principle in essence more or less identical slightly modified	(very) similar almost the same essentially the same largely the same practically the same virtually the same with some adjustments with some alterations with some changes with some modifications	(to) adapt (to) adjust (to) alter (to) change (to) modify (to) refine (to) revise (to) vary
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**Option 3:** The procedure/material you used is **significantly different from** the one you cite.

a novel step was... adapted from* based on* in line with	although in many ways similar although in some ways similar although in essence similar	(to) adapt* (to) adjust* (to) alter* (to) change*
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loosely based on partially based on partly based on*	with the following modifications/changes:	(to) refine* (to) revise (to) vary* (to) modify*
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\*as you can see, these can be used in **Option 2** as well as **Option 3**. When you use them in **Option 2** you may not need to state the differences between the procedure/material you used and the one you cite if they are not significant. In **Option 3** those differences or modifications are significant and you should say what they were, especially if they were modifications which improved the procedure/material.

*Here are some examples of how these are used:*

- Developmental evaluation was carried out using the Bayley Scales of Infant Development (**Bayley, 1969**).
- The size of the Gaussians was adjusted **as in (Krissian et al., 2000)**.
- The centrifuge is a **slightly modified** commercially available model, the Beckman J6-HC.
- The protein was overexpressed and purified **as reported previously**.<sup>10,12</sup>
- **A revised version of** the Structured Clinical Interview (4th edition)<sup>6</sup> was used.
- **We modified** the Du and Parker filter to address these shortcomings and we refer to this modified filter as the MaxCurve filter.
- In our implementation **we followed** Sato *et al.* (1998) by using a discrete kernel size.

7. INDICATE WHERE PROBLEMS OCCURRED

<b>minimise problem</b>	<b>minimise responsibility</b>	<b>maximise good aspects</b>
did not align precisely only approximate	limited by inevitably	acceptable fairly well

it is recognised that less than ideal not perfect not identical slightly problematic rather time-consuming minor deficit slightly disappointing negligible unimportant immaterial a preliminary attempt not significant	necessarily impractical as far as possible (it was) hard to (it was) difficult to unavoidable impossible not possible	quite good reasonably robust however* nevertheless*  <b>talk about a solution</b> future work should... future work will...* currently in progress currently underway
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\*There is an interesting difference between the phrase *future work should* and the phrase *future work will*. When you write *future work should* you are suggesting a direction for future work and inviting the research community in your field to take up the challenge and produce the research. When you write *future work will* you are communicating your own plans and intentions to the research community and it should be understood that these plans and intentions belong to you — you're saying 'hands off!' to the rest of the research community and describing a research plan of your own

*Here are some examples of how these are used:*

- **Inevitably**, considerable computation was involved.
- Only a brief observation was feasible, **however**, given the number in the sample.
- **Although** centrifugation could not remove all the excess solid drug, the amount remaining was **negligible**.
- Solutions using ( $q = 1$ ) differed **slightly** from the analytical solutions.
- Continuing research **will** examine a string of dc-dc converters to determine if the predicted efficiencies can be achieved in practice.
- **While** the anode layer was **slightly** thicker than  $13\ \mu\text{m}$ , this was a **minor deficit**.