

- What type of information should be in this section, and in what order?
- How do I end this section?

4.4 Vocabulary

In order to complete the information you need to write this section of your paper you now need to find appropriate vocabulary for each part of the model. The vocabulary in this section is taken from over 600 research articles in different fields, all of which were written by native speakers and published in science journals. Only words/phrases which appear frequently have been included; this means that the vocabulary lists contain words and phrases which are considered normal and acceptable by both writers and editors.

In the next section we will look at vocabulary for the following areas of the model, apart from:

1. REVISITING PREVIOUS SECTIONS
2. SUMMARISING/REVISITING KEY RESULTS
3. REFINING THE IMPLICATION/S

Since most of the vocabulary you need for these can be found in previous sections, there is no need here for additional vocabulary input; you can refer back to the vocabulary sections in the units on Introductions, Materials/Methods and Results to find the appropriate language. When you are REFINING THE IMPLICATIONS, use the appropriate language from the IMPLICATIONS vocabulary in the Results section and avoid conclusions and implications which are not fully supported by your data.

4. MAPPING (RELATIONSHIP TO EXISTING RESEARCH)

This includes ways to show the reader where your contribution fits into the general research picture. Phrases like *consistent with* and *provides support for* are common here.

5. ACHIEVEMENT/CONTRIBUTION

Your achievement/contribution is often stated in the Present Perfect, especially when you refer to it in the Conclusion. Sentences which begin *We have demonstrated/described/investigated/developed/shown/studied/focused on etc.* are common here.

6. LIMITATIONS/CURRENT AND FUTURE WORK

These often occur very close to each other (sometimes even in the same sentence) because the limitations of the present work provide directions and suggestions for future work. Vocabulary to describe LIMITATIONS can be found in previous sections; vocabulary for FUTURE WORK includes phrases such as *should be replicated* and *further work is needed*.

7. APPLICATIONS

Your work may not have any direct or even indirect applications, but if it does, they are mentioned here. Relevant phrases include *have potential* and *may eventually lead to*. Including APPLICATIONS lets you show the value of your work beyond the narrow aims of your specific research questions. Both APPLICATIONS and FUTURE WORK provide an interface between your research article and the rest of the world and are therefore conventional ways of ending the research article.

4.4.1 Vocabulary task

Look through the Discussions/Conclusions in this unit and in your target articles. Underline or highlight all 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 following pages. This includes all the 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.

4.4.2 Vocabulary for the Discussion/Conclusion

1. REVISITING PREVIOUS SECTIONS
2. SUMMARISING/REVISITING KEY RESULTS
3. REFINING THE IMPLICATIONS

When you revisit these sections, don't change the words in the sentences unnecessarily; your aim is to create an 'echo' that will remind the reader of what you said before, so repeating the same words and phrases is advantageous.

If you begin by revisiting the Materials/Methods or the Introduction, you will probably also want to summarise or revisit important results in

the Discussion/Conclusion. Your results are the key evidence in support of your conclusions, and it is helpful to keep these results clearly in your reader's view.

4. MAPPING (RELATIONSHIP TO EXISTING RESEARCH)

The selection of names and studies appearing in the Discussion/Conclusion is very significant to your reader; they need to be able to group research projects together and understand how your study relates to and is different from existing research. You should identify your 'product' in terms of the research 'market'. You may also compare the work/approach of other researchers with yours in order to validate your work — or discredit theirs.

<p>This/Our study/method/result/approach is:</p> <p>analogous to comparable to compatible with consistent with identical (to) in contradiction to in contrast to in good agreement (with) in line with significantly different (to/from) the first of its kind (very/remarkably) similar (to) unlike</p>	<p>This/Our study:</p> <p>broadens challenges compares well (with) confirms contradicts corresponds to corroborates differs (from) extends expands goes against lends support to mirrors modifies proves provides insight into provides support for refutes supports tends to refute verify</p>
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Note: Don't forget that a simple comparative (e.g. *stronger/more accurate/quicker etc.*) is an effective way to highlight the difference between your work and other relevant work.

Here are some examples of how these are used:

- **To the knowledge of the authors**, the data in Figs. 4–6 is the **first of its kind**.
- The results of this simulation therefore **challenge** Laskay's assumption that percentage porosity increases with increasing Mg levels.
- The GMD method provides results that **are comparable to** existing clay hydration processes.
- **Similar** films on gold nanoparticles have also been found to be liquid-like.
- Using this multi-grid solver, load information is propagated **faster** through the mesh.
- Our results are **in general agreement with** previous morphometric and DNA incorporation studies in the rat [2.6].
- Our current findings **expand** prior work.⁵
- The system described in this paper is **far less** sensitive to vibration or mechanical path changes than previous systems.
- **Unlike** McGowan, we did not identify 9-*cis* RA in the mouse lung.

5. ACHIEVEMENT/CONTRIBUTION

As you know, science writing does not generally permit the use of the exclamation mark (!), but the vocabulary used to state your achievement or contribution can still communicate that the achievement is exciting. The vocabulary list has therefore been divided into two sections; the first is a list of !-substitutes, which can be used when the achievement is very exciting, and the second is a list of slightly 'cooler' — but still positive — language.

!-substitutions

<p>compelling crucial dramatic excellent exceptional exciting</p>	<p>overwhelming perfect powerful remarkable striking surprising</p>
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<p>extraordinary ideal invaluable outstanding</p>	<p>undeniable unique unusual unprecedented vital</p>
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Positive language

<p>accurate advantage appropriate attractive beneficial better clear comprehensive convenient convincing correct cost-effective easy effective efficient encouraging evident exact feasible flexible important low-cost novel productive realistic relevant robust</p>	<p>Useful verbs:</p> <p>assist compare well with confirm could lead to enable enhance ensure facilitate help to improve is able to offer an understanding of outperform prove provide a framework provide insight into provide the first evidence remove the need for represent a new approach to reveal rule out solve succeed in support yield</p>
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simple stable straightforward strong successful superior undeniable useful valid valuable	
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Here are some examples of how these are used:

- The presence of such high levels is a **novel** finding.
- We identify **dramatically** different profiles in adult lungs.
- Our results **provide compelling evidence** that this facilitated infection.
- These preliminary results demonstrate the **feasibility** of using hologram-based RI detectors.
- Our data **rule out** the possibility that this behaviour was a result of neurological abnormality.
- The system presented here is a **cost-effective** detection protocol.
- A **straightforward** analysis procedure was presented which **enables** the **accurate** prediction of column behaviour.
- Our study **provides the framework** for future studies to assess the performance characteristics.
- We have made the **surprising** observation that Bro1-GFP focus accumulation is also pH-dependent.
- We have derived **exact** analytic expressions for the percolation threshold.
- Our results provide a **clear** distinction between the functions of the pathway proteins.

6. LIMITATIONS/CURRENT AND FUTURE RESEARCH

You will normally outline the limitations of your own work, but this is not expressed as a problem with your work, rather it provides suggestions for

future work. This invitation to the research community improves the status of your work by communicating that there is much research to be done in this area.

Note that using *will* or the Present Continuous (e.g. *we will integrate/we are integrating this technique with the FEM implementations*) communicates your own intentions or work in progress; *should* is used to invite research from others (*This technique should be integrated with the FEM implementations*).

<p>a/the need for at present encouraging fruitful further investigations further work is needed further work is planned future work/studies should future work/studies will in future, care should be taken in future, it is advised that... holds promise interesting it would be beneficial/useful</p>	<p>possible direction promising recommend remain to be (identified) research opportunities should be explored should be replicated should be validated should be verified starting point the next stage urgent worthwhile</p>
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Here are some examples of how these are used:

- Our results are **encouraging** and **should be validated** in a larger cohort of women.
- However, the neural mechanisms underlying these effects **remain to be** determined.
- This finding is **promising** and **should be explored** with other eukaryotes.
- **Future work should** focus on the efficacy of ligands synthesised in the Long group.
- An important question for **future studies** is to determine the antidepressant effects of such drugs.

7. APPLICATIONS/APPLICABILITY/IMPLEMENTATION

Research work does not always have a clear application. However, in some cases it is clear how the work can be used, particularly if your project has resulted in a device or product of some kind. In such cases, you should indicate possible applications or applicability, and in many cases this can be derived from points made earlier in the Introduction. Don't forget to use modal verbs such as *could*, *should* and *may*.

eventually in future soon possible	apply have potential implement lead to produce use utilise
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Here are some examples of how these are used:

- Our technique **can be applied to** a wide range of simulation applications.
- The PARSEX reactor therefore **could be used** for the realistic testing of a wide range of control algorithms.
- It **should be possible**, therefore, to integrate the HOE onto a microchip.
- This approach **has potential** in areas such as fluid density measurement.
- The solution method **could be applied** without difficulty to irregularly-shaped slabs.
- Our results mean that in dipping reservoirs, compositional gradients can now **be produced** very quickly.
- This could **eventually lead to** the identification of novel biomarkers.

4.5 Writing a Discussion/Conclusion

In the next task, you will bring together and use all the information in this unit. You will write a Discussion/Conclusion according to the model, using the grammar and vocabulary you have learned, so make sure that you have

both the model (Section 4.3.3) and the vocabulary (Section 4.4) in front of you.

In this unit you have seen the conventional model of the Discussion/Conclusion and the vocabulary conventionally used has been collected. Remember that when you write, your sentence patterns should also be conventional, so use the sentence patterns you have seen in the Discussions/Conclusions in this unit and in your target articles as models for the sentence patterns in your writing.

Follow the model exactly this time, and in future, use it to check the Discussion/Conclusion of your work so that you can be sure that the information is in an appropriate order and that you have done what your readers expect you to do in this section.

Although a model answer is provided in the Key, you should try to have your own answer checked by a native speaker of English if possible, to make sure that you are using the vocabulary correctly.

4.5.1 Write a Discussion/Conclusion

Imagine that you and your team have designed a machine which can remove chewing gum from floors and pavements by treating the gum chemically to transform it into powder and then using vacuum suction to remove it.

In the Introduction, you began by saying that chewing-gum removal is a significant environmental problem. You then provided factual information about the composition of chewing gum^{1,2} and the way in which it sticks to the floor.⁶ After that, you looked at existing chewing-gum removal machines^{3,4} and noted that research has shown they are unable to use suction to remove gum without damaging the floor surface.¹⁰ You referred to Gumbo *et al.*, who claimed that it was possible to use chemicals to dissolve chewing gum.⁵ At the end of the Introduction you announced that you and your research team had designed a chewing gum removal machine (CGRM), which you call GumGone. GumGone sprays a non-toxic chemical onto the gum which transforms it to white powder. The machine can then remove the gum using suction without damaging the floor surface.

In the Methodology you described the design and construction of the machine. You compared your CGRM, GumGone, to two existing machines, Gumsucker³ and Vacu-Gum.⁴ You then gave details of a set of