

1.4.1 Vocabulary for the Introduction

1. ESTABLISHING SIGNIFICANCE

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|---------------------------|--------------------------------|
| (a) basic issue | economically important |
| (a) central problem | (has) focused (on) |
| (a) challenging area | for a number of years |
| (a) classic feature | for many years |
| (a) common issue | frequent(ly) |
| (a) considerable number | generally |
| (a) crucial issue | (has been) extensively studied |
| (a) current problem | importance/important |
| (a) dramatic increase | many |
| (an) essential element | most |
| (a) fundamental issue | much study in recent years |
| (a) growth in popularity | nowadays |
| (an) increasing number | numerous investigations |
| (an) interesting field | of great concern |
| (a) key technique | of growing interest |
| (a) leading cause (of) | often |
| (a) major issue | one of the best-known |
| (a) popular method | over the past ten years |
| (a) powerful tool/method | play a key role (in) |
| (a) profitable technology | play a major part (in) |
| (a) range (of) | possible benefits |
| (a) rapid rise | potential applications |
| (a) remarkable variety | recent decades |
| (a) significant increase | recent(ly) |
| (a) striking feature | today |
| (a) useful method | traditional(ly) |
| (a) vital aspect | typical(ly) |
| (a) worthwhile study | usually |

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| (an) advantage attracted much attention benefit/beneficial commercial interest during the past two decades | well-documented well-known widely recognised widespread worthwhile |
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Here are some examples of how these are used:

- A **major current focus** in population management is how to ensure sustainability of...
- **Numerous experiments have established that** ionising radiation causes...
- Low-dose responses to radiation have **generated considerable recent research interest**.
- Analysis of change in the transportation sector is **vital** for two **important** reasons: ...
- PDA accounts for **over 95%** of all pancreatic cancers.
- **It is generally accepted that** joints in steel frames operate in a semi-rigid fashion.
- Nanocrystalline oxide films **are attracting widespread interest** in fields such as...
- **The importance of** strength anisotropy has been demonstrated by...
- Convection heat transfer phenomena **play an important role in** the development of...
- For **more than 100 years** researchers have been observing the stress-strain behaviour of...
- **Much research in recent years has focused on** carbon nanotubes.

2. VERBS USED IN THE LITERATURE REVIEW TO PRESENT PREVIOUS AND/OR CURRENT RESEARCH AND CONTRIBUTIONS

| | | |
|------------------|-------------|-------------|
| achieve | develop | obtain |
| address | discover | overcome |
| adopt | discuss | perform |
| analyse | enhance | point out |
| apply | establish | predict |
| argue | estimate | present |
| assume | evaluate | produce |
| attempt | examine | propose |
| calculate | explain | prove |
| categorise | explore | provide |
| carry out | extend | publish |
| choose | find | put forward |
| claim | focus on | realise |
| classify | formulate | recognise |
| collect | generate | recommend |
| compare | identify | record |
| concentrate (on) | illustrate | report |
| conclude | implement | reveal |
| conduct | imply | revise |
| confirm | improve | review |
| consider | incorporate | show |
| construct | indicate | simulate |
| correlate | interpret | solve |
| deal with | introduce | state |
| debate | investigate | study |
| define | measure | support |
| demonstrate | model | suggest |
| describe | monitor | test |
| design | note | undertake |
| detect | observe | use |
| determine | prefer | utilise |

Here are some examples of how these are used:

- This phenomenon **was demonstrated** by...
- In their study, expanded T-cells **were found** in...
- Initial attempts **focused on identifying** the cause of...
- Weather severity **has been shown to**...
- Early data **was interpreted** in the study by...
- The algorithm **has been proposed** for these applications...
- The results on pair dispersion **were reported in**...
- Their study **suggested** a possible cause for...
- An alternative approach **was developed** by...

Note: You can recycle these verbs at the end of the Introduction when you say what you plan to do in your paper (see 4 below)

3. GAP/QUESTION/PROBLEM/CRITICISM

This is often signalled by words such as however, although, while, nevertheless, despite, but.

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|---------------------------|----------------------------|
| ambiguous | (the) absence of |
| computationally demanding | (an) alternative approach |
| confused | (a) challenge |
| deficient | (a) defect |
| doubtful | (a) difficulty |
| expensive | (a) disadvantage |
| false | (a) drawback |
| far from perfect | (an) error |
| ill-defined | (a) flaw |
| impractical | (a) gap in our knowledge |
| improbable | (a) lack |
| inaccurate | (a) limitation |
| inadequate | (a) need for clarification |
| incapable (of) | (the) next step |
| incompatible (with) | no correlation (between) |
| incomplete | (an) obstacle |
| inconclusive | (a) problem |
| inconsistent | (a) risk |
| inconvenient | (a) weakness |
| incorrect | |

| | |
|---|---|
| <p>ineffective inefficient inferior inflexible insufficient meaningless misleading non-existent not addressed not apparent not dealt with not repeatable not studied not sufficiently + adjective not well understood not/no longer useful of little value over-simplistic poor problematic questionable redundant restricted time-consuming unanswered uncertain unclear uneconomic unfounded unlikely unnecessary unproven unrealistic unresolved unsatisfactory unsolved unsuccessful unsupported</p> | <p>(to be) confined to (to) demand clarification (to) disagree (to) fail to (to) fall short of (to) miscalculate (to) misjudge (to) misunderstand (to) need to re-examine (to) neglect (to) overlook (to) remain unstudied (to) require clarification (to) suffer (from)</p> |
| | <p>few studies have... it is necessary to... little evidence is available little work has been done more work is needed there is growing concern there is an urgent need... this is not the case unfortunately</p> |

Here are some examples of how these are used:

- **Few researchers have addressed the problem** of...
- **There remains a need for** an efficient method that can...
- However, light scattering techniques have been **largely unsuccessful** to date.
- The high absorbance makes this **an impractical option** in cases where...
- **Unfortunately**, these methods do not always guarantee...
- **An alternative approach** is necessary.
- The function of these proteins **remains unclear**.
- These can be **time-consuming** and are often **technically difficult** to perform.
- **Although** this approach improves performance, it results in **an unacceptable** number of...
- Previous work has focused **only** on...
- However, the experimental configuration was **far from optimal**.

Note: Some of these words/phrases express very strong criticism. A useful exercise is to put an asterisk (*) next to those you think you could use if you were talking about the research of your professor or supervisor. You can also alter them to make them more polite (*i.e.* instead of *unsuccessful*, which is quite a strong criticism, you could write *may not always be completely successful*).

| | | |
|------------------|------------------------------|-----------------------|
| (to) attempt | (is) organised as follows: | (were/are) able to |
| (to) compare | (is) set out as follows: | accurate/accurately |
| (to) concentrate | (is/are) presented in detail | effective/effectively |
| (on) | (our) approach | efficient/efficiently |
| (to) conclude | (the) present work | excellent results |
| (to) describe | (this) paper | innovation |
| (to) discuss | (this) project | new |
| (to) enable | (this) report | novel method |
| (to) evaluate | (this) section | powerful |
| (to) expect | (this) study | practical |

4. THE PRESENT WORK

| | | |
|--|--|---|
| (to) facilitate (to) illustrate (to) improve (to) manage to (to) minimise (to) offer (to) outline (to) predict (to) present (to) propose (to) provide (to) reveal (to) succeed | (this) work begin by/with close attention is paid to here overview | simple straightforward successful valuable |
| | | aim goal intention objective purpose |

Here are some examples of how these are used:

- **This paper focuses on...**
- **The purpose of this study is to describe and examine...**
- **In order to** investigate the biological significance...
- **In this paper we present...**
- New correlations were developed with **excellent** results...
- **In the present study** we performed...
- **This paper introduces** a scheme which solves these problems.
- **The approach we have used in this study** aims to...
- **This study** investigated the use of...
- **In this report** we test the hypothesis that...
- **This paper is organised as follows:**...

Note: In a thesis or a very long research paper, you use these to say what each chapter or section will do. Don't rely on one-size-fits-all verbs such as *discuss*; some chapters/sections do not 'discuss' anything, and even if they do, their main purpose may be to *compare* things, *analyse* things or *describe* things rather than to *discuss* them.