Academic Writing Handbook

PREPARED BY LUCY BLANEY-LAIBLE, PH. D.

Abstracts & Dissertations
Discourse Markers
Academic Register
Discussing Data

Explanations · Exercises · Vocabulary
Academic Writing Handbook (Skript)
Sprachenzentrum Universität Stuttgart,
2016

Lucy Blaney-Laible, Ph.D.
Sprachenzentrum, Universität Stuttgart
Breitscheidstraße 2, 70174 Stuttgart

0711 685.88055

http://www.sz.uni-stuttgart.de/
Contents

Common Vocabulary and Style Issues in Academic Writing .................................................. 4
  Academic Writing Style ........................................................................................................ 4
  Avoiding Confusion ............................................................................................................. 7
Discourse Markers/Signposts................................................................................................. 11
  Rewriting sentences to include discourse markers: .......................................................... 16
  Discourse markers in authentic, published texts: ............................................................... 17
Cause and Effect .................................................................................................................... 20
  Hedging ............................................................................................................................... 21
Conditionals .......................................................................................................................... 22
  Zero Conditional: Always True .......................................................................................... 22
  First Conditional: Making predictions .............................................................................. 23
  Second Conditional: Not Real Possibilities ....................................................................... 24
  Third Conditional: In the Past ........................................................................................... 24
  Common mistakes: ............................................................................................................. 25
Tenses ..................................................................................................................................... 26
  Simple Past Tense............................................................................................................... 26
    Methodologies- Describing how a study was carried out .................................................. 26
  Results ................................................................................................................................ 27
  Describing previous studies and their results .................................................................... 27
  Describing events ............................................................................................................... 27
  Present Perfect ................................................................................................................. 27
    Describing the combined knowledge of previous studies (rather than the specific study)  28
    Showing relevance in relation to recent developments .................................................. 28
  Simple Past vs. Present Perfect ......................................................................................... 28
  Simple Present .................................................................................................................... 29
  Future Tense ........................................................................................................................ 32
  Present Continuous / Present Progressive .......................................................................... 33
  Exercise ............................................................................................................................... 33
  Passive Voice ...................................................................................................................... 34
How to form it ........................................................................................................................................ 34
When to use the passive voice ........................................................................................................ 35
Common problems .......................................................................................................................... 36
A note on passive voice as a method for avoiding “I” and “we” .................................................. 40
Important phrases for writing research papers .............................................................................. 42
Introductory sentences .................................................................................................................. 42
Significance and Background ....................................................................................................... 43
Methodology / Components of research strategy ......................................................................... 45
Major findings ............................................................................................................................... 46
Discussing Data (Charts, Graphs, Photographs, Diagrams, equations, etc.) .............................. 46
Conclusion/ Evaluation .................................................................................................................. 48
Predictions/ Implications .............................................................................................................. 48
Acknowledgements ...................................................................................................................... 48
Disclosing Affiliations or Conflict of Interest .............................................................................. 49
Figures in Your Research Writing ................................................................................................. 51
Abstract Writing for Publications and Conferences .................................................................. 58
Collocations .................................................................................................................................... 65
Academic Vocabulary ................................................................................................................... 73
When to use the comma ................................................................................................................ 87
Bibliography .................................................................................................................................... 91
Common Vocabulary and Style Issues in Academic Writing

Academic Writing Style
Since so much time in language classes is focused on speaking, it is often difficult to determine exactly how academic writing is different. Academic writing is much more formal than spoken language or casual styles of writing, such as magazine articles or news articles. Below, you will find several examples of commons problems to avoid, and ways to adapt.

A lot- while this phrase is very common and often acceptable when speaking, it is too informal for academic writing. Since ‘a lot’ has several different meanings, example sentences are given below, with suggestions for replacing ‘a lot.’

A lot of climate scientists have agreed that global warming is a serious threat to the planet’s natural balance.
Many / A majority of / A significant number of

There was a lot of difference between our first hypothesis and our second one.
significant / meaningful / substantial

A lot of research has been done on the effects of methane gas on surrounding vegetation.
A great deal / Substantial / Considerable / Extensive

Unfortunately, a lot of data has been produced that cannot be processed.
a large quantity of / much

Researchers rely on each other a lot for peer review and constructive criticism.
often / frequently / many times

There are a lot of ways to approach one problem, and not all of them are right.
many / several

By adjusting the sensitivity of the sensors, the investigators were able to improve the quality of the output a lot.
significantly / markedly / notably
Contractions – Again, these are acceptable in speaking, but not in formal writing.¹

The Internal Review Board of the university carefully outlines what researchers can and can’t do.
can’t → cannot

Although many theories exist, we don’t fully understand black holes.
don’t → do not

Attempts were made to recover the data, but the full experiment couldn’t be repeated due to a lack of time.
couldn’t → could not

Our foundation won’t fund projects that fail to submit regular updates on the research project.
won’t → will not

Abbreviations or Acronyms – If you use an abbreviation, you must first write out the entire meaning, and thereafter you can use the abbreviation.

The British Broadcasting Corporation (BBC) has been responsible for a renewed interest in world news and sports in the last decade.

Their initial results were presented at the Latin American Studies Association (LASA) conference in 1999.

Etc. and other abbreviations- Although etc., i.e. and e.g. are common in casual types of writing, such as emails, it is best to avoid them in academic writing. Additionally, their overuse can interrupt the flow of the writing and can become distracting.

After each experiment the equipment needs to be washed, sterilized, dried, etc.
After each experiment the equipment needs to be washed, sterilized, dried and stored properly.

Participants were asked to fill out a form, phone the office weekly, record their reactions, etc.
Participants were asked to fill out a form, phone the office weekly, record their reactions, and make note of any changes in their diet.

¹ While contractions are not permitted, keep in mind that apostrophes / inverted commas (’) are necessary to create possessives, such as The researcher’s hypothesis proved true or The investigators’ theories were tested.
It is extremely important that parents protect children from exposure to heavy metals, e.g., mercury.

The samples were handled properly, i.e., kept in low light in a sterile environment.

Kind of / sort of / a little bit - These descriptions are all too casual and imprecise for academic writing. You can substitute another adjective or adverb, such as somewhat, slightly, rather, moderately, relatively, to some extent, or partially.

Get / got - Using got can make writing look too casual for an academic context.

When the solution was heated above 100 degrees centigrade, it got unstable.

The astronauts were debriefed for several days after they got back.

We got several applications for the new lab assistant position.

We received several applications for the new lab assistant position.
Exercise- Replace the inappropriate word or phrase with something more appropriate for academic writing:

a) A lot of scientific discoveries are made by accident.
b) It was found that minor adjustments to the sensor could improve accuracy a lot.
c) Their presentation got a lot of positive feedback.
d) Vaccinated children get varicella less than their unvaccinated counterparts.
e) The insects’ mating patterns got interrupted by the vibrations from a nearby construction site.
f) It is common for some people to get kind of depressed in the winter months due to a lack of sunlight.
g) The FBI gets lots of criminal complaints every year.
h) The initial program produced a lot of errors and had to be completely rewritten.
i) There was a lot of difference between the first set of data and the second.
j) Although not all of the project goals were met, the possibility for future research is kind of promising.
k) Airplanes can’t be put into service until they’ve had testing, test flights, etc.
l) The FICA score is one of the determiners of people’s eligibility for a loan.
m) Elderly patients pose particular challenges because they often take several medicines at once, e.g. pills and vitamin supplements.

n) Dogs are mammals, i.e. warm-blooded animals that give birth to live offspring and produce milk to feed those offspring.
o) People with lactose intolerance should not consume milk products, e.g. cheese, yogurt and ice cream.

Avoiding Confusion
Vocabulary issues your word processing program often does not recognize

Then vs. Than

- Than is used to make comparisons
  - The program ran longer than expected.
  - Smokers have a significantly higher risk of lung cancer than non-smokers.
Then is used for time and sequences
- First the data were processed in batches, and then compiled into useful tables. (next)
- We scheduled a meeting for the 31st of August, but the supervisor of the project was not able to meet then. (at that time)
- Now and then, anomalies appeared in the results and had to be carefully investigated. (sometimes or occasionally)
- If the materials are exposed to water, then they will shrink. (as a result)

**Affect vs. Effect**
- affect with an *a* means "to influence" (verb)
  - A person’s attitude toward the activity can affect how well she or he performs.

- effect is the result of an action (noun)
  - The results of the study showed that political affiliation had no effect on whether citizens chose to vote.

**Accept vs. Except**
- accept means to receive willingly, to approve, to agree
  - The proposal was accepted by the committee and the researchers could begin the project immediately.
  - I accept your invitation to be a guest lecturer at Beachfront University.
  - If we accept the following data set as correct, then the final figures are also likely correct.

- except means to leave out or take out, exclude
  - The team leader is extremely busy and should not be contacted except in the case of an emergency.
  - Excepting the last set of data, some remarkable patterns can be detected.
  - Students taking a double major are excepted from the usual foreign language requirement.

**Its vs. It’s**
- Its is a possessive form
  - The cost of the project exceeded its budget.
  - The English empire set out to increase its global influence.

- It’s is a contraction representing ‘it is’ – Since contractions of this kind are not acceptable in academic writing, they should be omitted altogether. They are acceptable in emails and other informal kinds of communication.
  - It’s too hot to wear a jacket today.
  - It’s necessary to complete all of these forms before the due date.
Weather vs. Whether

- Weather refers to the state of the atmosphere (rain, clouds, sunshine, etc.)
  - It is believed that global warming will have a significant impact on weather patterns in the next decade.

- Whether indicates a choice between alternatives
  - The professor should decide whether she will attend the conference in Berlin or the one in Paris.
  - After graduating from high school, students must determine whether they are interested in further study.

Adapt vs. Adopt

- Adapt means to change or fit to a new purpose *(Adapt is always followed by the preposition to)*
  - As the climate on Earth has changed, animals have adapted to the new environment.
  - We do expect all employees to adapt to the new workplace policies established this month.

- Adopt means to choose to follow or to take on
  - Europe must adopt new rules regarding its currency if it wants the Eurozone to survive.
  - New methods must be adopted to protect the ethical integrity of the researchers.

Adverse vs. Averse

- Adverse signifies negative consequences
  - Scientists are attempting to determine whether all of the adverse effects of climate change can be reversed.
  - If the methodologies are not strictly observed, it could have adverse consequences on the outcome of the study.

- Averse signals dislike (usually in people or animals) *(Averse is followed by to)*
  - She was averse to performing any experiments on animals.
  - Some patients are averse to taking advice from doctors that receive financial support from large pharmaceutical companies.

Choose the appropriate word to complete the sentence:

a) The affect / effect of the medication on her illness was immediate and long-lasting.

b) The addition of night courses had a positive affect / effect on the number of non-traditional students attending the university.
c) The second experiment showed more promising results than the first one.

d) The aluminum is heated and then it is molded through a process of die casting.

e) If we accept the theory of plate tectonics, it is easier to understand how earthquakes happen.

f) Most project applications are accepted for funding, but there are some important criteria that must be observed.

g) All prior studies have focused on friction except one limited investigation that was recently published.

h) She has not decided whether to accept the position at a new university.

i) Meteorologists study more than just the weather.

j) When a turtle becomes frightened, it hides in its shell.

k) It’s still impossible to say whether coal can truly become ‘clean’ energy in the future.

l) She quickly adapted to the new work group and was able to contribute excellent ideas.

m) Russia has adopted a rather confrontational tone in its dialogue with Turkey.

n) Dr. Barnes was averse to the idea of testing the medication on human subjects this early in the trial period.

o) A true hero can face adversity with conviction.

p) It was difficult to complete the study because of the adverse environment.
Discourse Markers/Signposts

Discourse markers help your writing to flow better and to tell a more cohesive story. They aid your readers in following your logic and also help to persuade them of your point of view.  

Sort the discourse markers into the correct categories.

<table>
<thead>
<tr>
<th>for instance</th>
<th>in other words</th>
<th>in brief / in short</th>
<th>for example</th>
</tr>
</thead>
<tbody>
<tr>
<td>as long as</td>
<td>but</td>
<td>whenever</td>
<td>likewise</td>
</tr>
<tr>
<td>also</td>
<td>as soon as</td>
<td>otherwise</td>
<td>due to</td>
</tr>
<tr>
<td>in conclusion</td>
<td>hence</td>
<td>in particular</td>
<td>in effect</td>
</tr>
<tr>
<td>consequently</td>
<td>meanwhile</td>
<td>so</td>
<td>since</td>
</tr>
<tr>
<td>although</td>
<td>first (firstly)</td>
<td>subsequently</td>
<td>once</td>
</tr>
<tr>
<td>too</td>
<td>equivalent to</td>
<td>whereas</td>
<td>what is more</td>
</tr>
<tr>
<td>again</td>
<td>in this case</td>
<td>generally</td>
<td>on the contrary</td>
</tr>
<tr>
<td>accordingly</td>
<td>to illustrate</td>
<td>then / next</td>
<td>while/whilst</td>
</tr>
<tr>
<td>besides</td>
<td>in practice</td>
<td>throughout</td>
<td>initially</td>
</tr>
<tr>
<td>moreover</td>
<td>in this case</td>
<td>in conclusion / to conclude</td>
<td>yet</td>
</tr>
<tr>
<td>concurrently</td>
<td>as a result</td>
<td>similarly</td>
<td>and</td>
</tr>
<tr>
<td>conversely</td>
<td>nevertheless</td>
<td>thus</td>
<td>in fact</td>
</tr>
<tr>
<td>alternatively</td>
<td>following</td>
<td>therefore</td>
<td>on the other hand</td>
</tr>
<tr>
<td>henceforth</td>
<td>in order to</td>
<td>further / furthermore</td>
<td>even so</td>
</tr>
<tr>
<td>such as</td>
<td>after / afterwards</td>
<td>second (secondly)</td>
<td>tantamount to</td>
</tr>
<tr>
<td>however</td>
<td>on the whole</td>
<td>in spite of / despite</td>
<td>at last</td>
</tr>
<tr>
<td>because</td>
<td>in all / overall</td>
<td>lastly</td>
<td>actually</td>
</tr>
<tr>
<td>by and large</td>
<td>broadly speaking</td>
<td>by doing so</td>
<td>at length</td>
</tr>
<tr>
<td>to sum up / to summarize / in summary</td>
<td>to begin / to begin with</td>
<td></td>
<td></td>
</tr>
<tr>
<td>simultaneously / at the same time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in comparison / by comparison</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>in addition / additionally</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Now consider which discourse markers can be used in which parts of a sentence. Not all discourse markers can be used in the same way, so it is important to review their place in the syntax of a sentence (or sentences). ³

<table>
<thead>
<tr>
<th>Cause/effect</th>
<th>Comparison / Contrast</th>
<th>Adding to an idea</th>
<th>Exemplifying</th>
<th>Concluding</th>
<th>Sequence</th>
</tr>
</thead>
</table>

Connecting or contrasting ideas in separate sentences (Initiating a sentence):

Connecting or contrasting ideas in the same sentence (followed by a dependent clause):

Connecting ideas in the same sentence (followed by a noun group):

adding ideas

showing contrast / difference

---

³ Cox, Kathy and Hill, David. *EAP Now!* Australia: Pearson. 2011
Remember the importance of commas when using discourse markers. When beginning a sentence with a signposting phrase, a comma usually follows. When joining two clauses, a comma precedes the signpost (discourse marker). Be mindful of the fact that with some signposts you have to create a new sentence. Otherwise you have run-on sentences (sentences that consist of two independent clauses which should be expressed separately).

The following examples clarify the issues mentioned above.

**Two sentences:** It would be incorrect to join these two sentences in one using a comma.

1) Several studies have been done on the influence of popular media on consumer behaviour. **However,** few studies have been able to measure the true impact on people’s lives.

2) **On the one hand,** the exploration of new treatments for cancers is a vital part of pharmaceutical research. **On the other hand,** such research is expensive and time-consuming.

**One sentence:** These discourse markers can be used to join two ideas into one sentence.

1) There are several steps that must be taken before beginning an investigation sponsored by the university, **such as** an internal review of the study’s methods and the approval of funding.
2) The need for greater research on magnetic fields is growing, **but** few universities are willing to invest the necessary funds.

**Followed by a noun phrase:**

1) According to a consultant pediatrician, the mother had not wanted to follow the doctors’ recommendations, **despite** the girl’s blood sugar being extremely high.  

2) **Unlike** physical containers, cell phones can contain millions of pages of text, thousands of photographs and hundreds of videos.  

**The following excerpts would be considered ungrammatical or poor style. Explain why. Can you rewrite the sentence(s) to preserve the meaning, but correct the grammar?**

- And another point is that there are too many amateurs involved in aviation.
- The orange harvest was expected to be significant. But none of the citrus trees survived the winter.
- She was unable to complete the project on time. Because of the fire in the lab.
- So several different sizes were ordered.
- Too the research board approved the project and said it could proceed.
- Fast pyrolysis of lignocellulosic biomass produces high energy density liquid fuel, called bio-oil, which has the potential as transportation fuel. But, crude bio-oils are chemically complex liquids with high oxygen contents (40% oxygen content), high viscosity, low pH, low thermal stability, and poor heating values (20 MJ/Kg).  
- Smartphones require a reliable battery, furthermore people increasingly find themselves in transit and away from a power outlet.
- Previous studies have found difficulty in isolating this particular protein, nevertheless our team was confident that it could be done.
- The patient did not respond to the medication, despite he ingested it as prescribed.

---


http://scholarship.law.duke.edu/djclpp/vol10/iss1/4

http://search.proquest.com/docview/912851348
• There are many reasons to choose renewable energy over fossil fuels for example solar despite some of its obvious drawbacks can be very useful moreover.

• The unique attributes of skyscrapers pose several challenges to architects, such as they are very tall.

Note: Many online publications dedicated to making science and research writing more accessible have begun using colloquial language (starting sentences with ‘but,’ using contractions such as don’t and won’t, using slang terms, etc). It is important to remember that these are examples of entertainment writing and not academic publications.

**Fill-in-the-blank:** Fill in the blank with the most appropriate discourse marker. Keep in mind that there may be more than one good answer.

There are two reasons for supporting pure scientific research. _______ it satisfies humans’ natural curiosity about the universe in which they live. _______ technological advances that followed on from pure scientific research have improved our way of living. _______. Shatter-proof glass has made traveling by car much safer. _______, improved aerospace materials have made flying faster, quieter and cheaper. _______, we should continue to support pure scientific research.

Technological advances often initially sound entirely positive, _______ often have hidden costs and risks that are not always apparent. _______, nuclear energy seemed wonderful when it was first developed _______ of its expected low cost _______ supposed lack of pollution. Safety was a concern and was taken seriously, _______. Strict policies were usually in place, and in most cases these did actually result in a low chance of an accident. _______, nothing is perfect, including safety systems, and when accidents or failures do happen, the consequences are extremely serious. Natural disasters are also a risk, _______ the Fukushima plant in Japan. Earthquakes and tidal waves cannot be reliably predicted, _______ plants can never be entirely safe, _______ of how many precautions are taken. _______, although actual operation of a nuclear reactor produces little visible pollution, disposal of the radioactive materials is extremely difficult and expensive. _______ nuclear power is now considered too expensive in many countries. _______, many governments have stopped planning to build more nuclear reactors.

---

7 Adapted from: Cox, Kathy and Hill, David. *EAP Now!* Australia: Pearson. 2011
Rewriting sentences to include discourse markers: These sentences are not joined together or enhanced by discourse markers or “signposts.” Read the sections and consider how stiff and dry they sound. Attempt to make them flow better and sound more convincing by adding discourse markers. It may be necessary to modify the sentences or change the word order.8

Suggested words: however, although, despite, as well as, such as, in fact, actually, but, by doing so, yet, because

1. The initial results of the study are inconclusive. The lessons learned from this trial will likely lead to more precise experiments in the future.

2. There was a worldwide response to the Ebola epidemic of 2014. There is much left to learn about the disease and its containment.

3. Previous studies have shown that warming temperatures make insects eat more and grow faster. Scientists often measure the effects of temperature on insect growth to predict how climate change will affect their distribution and abundance. A new study from Dartmouth College indicates that other factors play a role. Some can decrease the rate of growth. One of these factors is fear.9

4. This is a potentially lethal disease. Dr. Jones insisted on working with it for many years. He believed that the contribution to the greater good outweighed the personal risk.

5. Both eukaryotic and prokaryotic cells contain DNA. Only eukaryotic cells have a separate compartment called the nucleus for storing it.

6. Ibuprofen is a drug that has both positive and negative features. It is very effective at reducing pain and inflammation. It can be very irritating for the stomach. It is also a blood thinner. It could be dangerous for patients with bleeding disorders or other blood problems. It can cause drowsiness.

7. Decreasing the number of points in the program reduces the computational time significantly. This reduces accuracy. This saves on some costs and on time. It is appropriate in some contexts and not in others.

---

9 Adapted from: “Fear Factor May Offset Insect Growth Caused by Climate Change” Sept 24, 2014 by Entomology Today.
Discourse markers in authentic, published texts: Fill in the blanks with the missing discourse markers. (Citations for each text can be found in the footnotes. All texts are available from open-source journals, should you care to read them in their entirety.)

1. Research suggests that burnout consists of three dimensions: emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA). EE is the manifestation of the stress experienced when burnt out. It is what most people think of when they feel and report being burned out. __________, EE does not constitute burnout in its entirety. DP, the need to distance oneself from work as a result of exhaustion or feelings of cynicism toward one’s job, is also a critical dimension of the construct. Reduced PA, or loss of sense of self at work (efficacy), is considered to be a function, to varying degrees, of EE, DP, or a mixture of both dimensions (Maslach, Schaufeli, & Leiter, 2001). The burnout state is, __________, a complex, multidimensional construct that provides insight into employee’s psychological well-being, job attitude and productivity at work. __________, employee burnout is often conceptualized as the negative end of the same continuum where the positive end is employee engagement (Innanen, Tolvanen, & Salmela-Aro, 2014; Schaufeli, Bakker, & Salanova, 2006). The implication of this view is that increasing engagement and reducing burnout represents fundamentally the same task for organizations. __________, differentiating between the two concepts is a matter of perspective – much like describing the glass as half-full or half-empty.  

2. Such banning measures, __________, can also bring unintended negative effects. ______ prohibiting their trade, the products from these species may develop into rare and luxurious commodities. This perceived rarity could lead to increased consumer demand, making their illegal trade highly profitable. __________, when demand is sufficiently high, the protected species could eventually be driven to extinction (Courchamp et al., 2006; Hall et al., 2008). There is strong evidence that demonstrates how moving a species to a more restrictive CITES appendix can lead to a drastic increase in its illegal trade (Rivalan et al., 2007). During the transition period, between initial announcement of such a measure and its final implementation into the legislation, trade volumes have been observed to increase up to 135% (Rivalan et al., 2007). __________, the black market price of rhinoceros horn increased by more than 400% within 2 years of their listing under Appendix I (Rivalan et al., 2007).

3. As stated above, pelagic shark mortality is primarily due to their incidental capture in high seas fisheries as a result of the shared habitat of pelagic sharks and tunas. ______

---


retention and trade are banned, but not the actual capture, banning measures in their current form will have little impact on fisher-behavior. __________, capture rates are unlikely to change. __________ mortality rates are both gear and species specific (Skomal, 2007; Campana et al., 2009; Clarke et al., 2013), they are often high as a large portion of incidentally caught sharks are already dead/dying by the time they reach the vessel or after release (Rogan and Mackey, 2007; Poisson et al., 2014a; Hutchinson et al., 2015).  

4. Many of these studies have considered potential impacts to coastal areas where creeping sea level rise is expected to increase the risk profile for a number of coastal settlements. These studies are being delivered by a variety of providers ranging from the academic and research community, to general and specialised environmental and engineering consultants. __________, like any new discipline or service offering, a range of methodological approaches have been developed and applied. __________ to date there has been little comparison or consensus of approaches other than a general agreement that formal risk-based approaches are an appropriate framework for considering climate change risks (IPCC, 2014).  

5. The first three shortfalls are associated with problems in valuing advantages, and costs and benefits of adaptation responses. Generic difficulties with valuing climate change and disaster risk reduction strategies are well known (i.e. Maybee et al., 2012). __________, desalination plants were constructed in a number of Australian cities towards the end of the Millennium Drought in the early 2000s in response to the extended drought conditions. As luck would have it, significant rain events followed the commissioning of many of these plants. This __________ led to widespread political calls that the investment in these facilities was irresponsible and that no benefits from these facilities would accrue. This is __________ the clear likelihood of future water shortages (El Saliby et al., 2009). Such short-term views or political positioning undervalue the inevitable future risk reduction benefits of these facilities.  

6. This recent period is particularly interesting as influenza vaccination coverage rates have increased following the 2009 pandemic, at least in the US, potentially __________ (causing) different distributions of susceptibility compared to what has taken place in the pre-pandemic period, and the impact of that on the relative roles of the different age groups has not been assessed in detail in the literature.  

---

12 Travassos Tolotti, ibid.
7. __________ certain limitations, our results provide a cross-seasonal comparison of the relative roles of different age groups during epidemics associated with the major influenza (sub)types. Our estimates and simulation results ________ exhibit the variability in these relative roles during different influenza epidemics, __________ yield consistent evidence for a leading role of school age children in propagating the major influenza A epidemics.16

8. __________, the team discovered that the mechanism of banding and filming is surprisingly simple. "While the liquid evaporates, two things happen simultaneously: ______ the level of liquid in the container decreases, and ________, a deposit forms at the tip of the meniscus [the curved upper surface of liquids in a container], which emerges when the liquid climbs the glass wall up to a preferred height," said Kaplan. "At low particle concentrations, when the deposit grows slower than the decline rate of the level of the liquid, the liquid level moves away from the deposit. __________, the meniscus in between exceeds the height the liquid can support and 'breaks up.'

__________ a single band, and periodic bands are formed as the process repeats. At sufficiently high particle concentrations, ______________, the deposit grows fast enough so that meniscus break-up is avoided and uniform films occur."17

Re-Write: The following section contains writing that lacks discourse markers. Improve the paragraph by re-writing, editing, and inserting discourse markers. It may be necessary to change the wording and punctuation.

Car safety features are largely new. Cars have not always featured seatbelts and airbags. Many adults can remember a time when they rode in cars without any seatbelts. Many consumers did not believe that seatbelts were necessary. It was necessary to pass laws on seatbelt use. These laws helped to make seatbelt use commonplace. Car seats for infants improve the outcomes for babies in crashes. Much evidence exists that rear-facing car seats are safer than forward-facing. Current regulations mandate that infants under 12 months old must face the rear of the car. It is possible to maintain a child in a rear-facing seat longer. Many people choose not to do this. It is not a rule. They likely do not realize that the position is much safer for their child. Studies have shown that up to 50% of children’s car seats are incorrectly installed. This increases the risk of injury to the child in the event of a crash. Most people never have their car seat checked by a professional. Research reveals that parents that receive car seat installation instruction and education are more likely to install seats correctly. Their children are at a lower risk for serious injury in a crash. Recent funding cuts to fire and police departments have led to fewer car seat installation seminars. It is dangerous to allow a child to ride in a car seat that is not properly installed. Few people are ever fined or cited by the police.

Cause and Effect

Demonstrating cause and effect relationships is one of the most important elements of research writing. Link the following pairs of sentence fragments in a complete sentence in order to explain the cause and effect relationship between them both. You might need to alter some of the words given slightly and add a few of your own.

*Other ways to say causes: brings about, results in, promotes, enables, facilitates, produces, creates, affects, initiates, triggers, yields, creates, prompts, elicits, stimulates, provokes, leads to, contributes to, generates

a) increased stress 
   poor health
b) sugary drinks
   childhood obesity
c) braking
   friction
d) carbon fuel emissions
   global warming
e) shape of the wing of an airplane
   lift
f) weakening of composite materials
   ageing and stress
g) hybrid technology
   lower fuel costs
h) grassroots political involvement
   legislative change
i) advanced fertilizers
   increased grain production
j) strict gun laws
   safer community
k) a lack of diplomacy
   war
l) privacy laws
   personal privacy
m) overdose of medication
   seizures
n) higher spending on education
   more informed population
o) the consideration of environment
   better understanding of psychology
p) green color of leaves
   photosynthesis
q) skin cancer
   sun exposure
**Hedging** is a way to soften the connection when showing cause and effect, or to admit that all factors are not necessarily known. This is a crucial skill in academic writing because it admits the possibility of error and uncertainty and protects the author from being accused of making outrageous or unproven claims.  

<table>
<thead>
<tr>
<th>Word or Phrase</th>
<th>Softening Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>tend to</td>
<td>indicate that</td>
</tr>
<tr>
<td>suggest</td>
<td>could</td>
</tr>
<tr>
<td>arguably</td>
<td>generally</td>
</tr>
<tr>
<td>should</td>
<td>likely</td>
</tr>
<tr>
<td>often</td>
<td>sometimes</td>
</tr>
<tr>
<td>sometimes</td>
<td>usually</td>
</tr>
<tr>
<td>assumption</td>
<td>given that</td>
</tr>
<tr>
<td>correlation</td>
<td>may</td>
</tr>
<tr>
<td>probable</td>
<td></td>
</tr>
</tbody>
</table>

**Soften the following sentences by using one of the hedging words or phrases above:**

The method outlined in this paper will produce superior results to those methods promoted by previous studies.

This data proves that male birds communicate not only through singing, but also by rhythmically pounding their feet.

The Iraq war was the largest waste of money and resources ever authorized by the U.S. government.

Young women always buy the same brand of hand cream their mothers used.

It is safer to live in a neighbourhood with a higher median income than one with more poverty.

Children that do not learn to read at an early age will not go on to college and are not successful in life.

Those who finish medical school always go on to practice medicine.

**Exercise:** Can you use hedges to soften some of the cause and effect claims made in the previous exercise? (Ex. A lack of diplomacy often leads to war. Higher spending on education arguably leads to a more informed population.)

---

Note: When used sparingly, hedges indicate thoughtfulness in an author’s claims. However, piling up the hedges can undermine the author’s certainty in her or his own work, and are unnecessarily repetitive. Correct the following to account for this problem:

a) A positive outcome could be possible.
b) These results may seem to suggest that there is a likely connection.
c) Antioxidants may possibly have some effect on overall health.
d) A positive correlation may seem rather likely.
e) It could happen that maybe animals could lose some habitat in the building of the new waterway.
f) It could be that some participants potentially will not complete the entire survey.

Conditionals

Conditionals are sentence structures that explain a particular situation or circumstance and its consequences. If this happens, then that happens. Conditionals are commonly referred to as "if sentence structures" because they often contain the word "if," but often they can use other expressions, like: when, only if, unless, even if, in case, unless 19

Zero Conditional: Always True
[present] + [present]

The zero conditional deals with issues that are always true. They can often be thought of as stating a scientific or observable fact. The following are examples:

- If humans do not consume enough water, they die.
- If the temperature drops below 32 degrees Fahrenheit, water turns into ice.
- When water boils, it turns to vapor.
- If this film is exposed to light, it is ruined.
- This species does not reproduce unless sufficient food is available in the habitat.

Practice:

1) hydrogen combined with oxygen  
   water

2) listen to loud music too often hearing damage

First Conditional: Making predictions
If [present], then [future]

The first conditional deals with issues that have a real possibility of occurring. This conditional typically deals with future events or hypotheses. When people predict the outcome of their experiments, or forecast the future, they are utilizing the first conditional.

The first conditional uses the if/then structure and the words will, shall, can or may to convey the future action being considered. The following sentences are examples of the first conditional:

- If the program does not run, we will have to check it for errors.
- If the grant approval arrives soon, the lab equipment can be ordered by next week.
- If our calculations are correct, this prototype will far outperform its predecessor.
- I can work from home if my Internet connection gets fixed.
- Even if you check your writing twice, you will often find errors later.
- Unless we receive more support from the university, the project will be discontinued.
- They’ll come to the conference only if the university pays for the hotel.
- I’ll take an umbrella in case it rains.
- If you turn to page four, we will review the results section.
- Please call me if I can be of help. *
- Do not hesitate to write to me if I can be of service.
- When he arrives, I will ask him about the meeting.

*The use of the command form is an implied future

A note on commas: A comma is only used when the “if-clause” comes first in the sentence.

If I have enough time, I will call you. I will call you if I have enough time.

Practice:

1) receive the data in time process it over the weekend

2) Dr. Brown attends the conference ask him an important question

3) arrive at the hotel send me a text message
Second Conditional: Not Real Possibilities
If  [past simple],  [then clause] would [infinitive]

The second conditional uses would, could, or might. The second conditional deals with events that are not real and did not happen. It may be used to hypothesize about something that might happen, but that is unlikely, or to think about a particular scenario. Note that we always write “If I were...”, not “If I was...”, although “If I was...” is common in spoken English

- If we had more time, we could run more tests. [but we don’t have more time]
- If I knew the answer, I wouldn’t have to look it up in a book. [but I don’t know the answer]
- If we had more money, we could hire an assistant. [but we don’t have more money]
- If I had a million dollars, then I would quit my job. [but I don’t have a million dollars]

Practice:
1) bigger apartment   work from home
2) read Portuguese   understand this journal article
3) finish by 9pm every night   have more time to relax

Third Conditional: In the Past
If [past perfect],  [conditional expression] past perfect

Specifically, the third conditional talks about events in the past and ponders the effects of those events not happening. Because we can't go back in time, the third conditional deals with events that have no possibility of happening. The third conditional uses the words would have to convey these impossible events. The following are examples:

- If you had called me earlier, I wouldn’t have left the office so early.
- If he had spent more time on the project, it would not have seemed so unprofessional.
- If he hadn’t practiced so much, his presentation would not have been so smooth and convincing.
Practice:

1) remembered to back-up the data

lost the entire file

______________________________________________________________________________

2) known about the free drinks

visited the presentation

______________________________________________________________________________

Common mistakes:

If you will call me tomorrow, then I will have the results for you.

In case my students will need my help, I will be in my office until 9am.

The authors will not publish the work if the publisher will not accept it.

Unless he will accept the terms of the contract, he will not be hired by the company.

If I had studied more, I will pass the exam.

Even if you will finish tonight, we will be behind schedule.

If I would have more resources, I would publish a book.

That report would not get finished on time even if you would work all night.

If I was taller, I could dunk a basketball.

If you had called me, I would not went to the party alone.

When I will have all the information, I will send it to you in an email.
Tenses

It is essential to write in the appropriate tense, both to avoid confusion and to be clear in your expression. The examples below come from original, published journal articles; their full citations can be found in the footnotes.

Simple Past Tense – The simple past tense is the usual way of expressing actions in the past, previous studies, events, methodologies, and results.

Methodologies

- Grower and winery lists were provided by industry associations in each of the northern states. An email survey was sent to all 2746 members of these lists with a recorded overall response rate of 18% (501 responses). An additional 110 responses were obtained from non-affiliated growers and wineries through a survey link announced during the Northern Grape Project (NGP) webinars. Overall, 611 survey responses were gathered from both growers and wineries, of which 56% of them were growers, 35% were both growers and winery operators and 9% were winery only operators.  

- To verify the predictions of the model, experiments were carried out in a single-cylinder research engine at speeds from 1000-3200 rpm, spark advances from 30-110 deg b.t.c and fuel-air equivalence ratios from 0.7-1.5. Simultaneous measurements of the cylinder pressure and the position of the flame front as a function of crank angle were made, and good agreement with the predictions of the model was obtained for all operating conditions.  

- We used three selection criteria to select wetlands in best available condition: (i) a form of protected area status existed that included and surrounded the wetland; (ii) the immediate watershed had no or minimal soil or vegetation disturbance; and (iii) there were undisturbed soils and vegetation in a proximal zone of 50 m from the wetland. An attribute-based typology and ground truthing were used to select wetlands meeting these criteria.  

---

Results

- Our data indicated that marmoset ESCs responded differently than mouse ESCs in such embryo toxicity screens with no obvious dependency on chemical or compound classes and thus suggest that embryo toxicity screening results could be affected by species-driven response variation. In addition, ESCs derived from rhesus monkey, an Old World monkey, and phylogenetically closer to humans than the marmoset, were observed to respond differently to test compounds than marmoset ESCs.23

Describing previous studies and their results

- Wiseman and Ellig (2007) studied the impact of the repeal of the prohibition of out-of-state direct shipment of wine in the state of Virginia and found that the repeal narrowed the retail price gap between online and brick-and-mortar businesses by 40%, which was considered an improvement in market efficiency that benefited both consumers and producers.24

Describing events

- Following a major earthquake, a 15-metre tsunami disabled the power supply and cooling of three Fukushima Daiichi reactors, causing a nuclear accident on 11 March 2011. All three cores largely melted in the first three days. The accident was rated 7 on the INES scale, due to high radioactive releases over days 4 to 6, eventually a total of some 940 PBq (I-131 eq). Four reactors were written off due to damage in the accident – 2719 MWe net. After two weeks, the three reactors (units 1-3) were stable with water addition and by July they were being cooled with recycled water from the new treatment plant. Official ‘cold shutdown condition’ was announced in mid-December.25

- In the first decades of the twentieth century Palma emerged as a city worth visiting with a promising network of hotels and organised tours. Palma became an urban playground for British bohemians, artists, expatriates, and socialites. Their notion of leisure and pleasure (on a faraway island) provided the leitmotiv for the years to come.26

Present Perfect: Present perfect is used far less often in English than it is in German. Generally, it is used to describe the lessons from on-going studies or continuing research findings that are still relevant. You may use it to give some contextual information about the progress of research in the field, or to set the stage for your own research.

Describing the combined knowledge of previous studies (rather than the specific study)

- Previous literature has suggested that lithium chloride, actively used in psychiatric pharmaceuticals, possesses the capacity for inducing skeletal teratogenicity. In addition, our own research has suggested that lithium derivatives cause skeletal teratogenicity in certain concentration ranges.²⁷

- The main focus of previous studies has been to apply a range of relatively distinct methodologies to constrain changes in the odds of those events, including both parametric statistics (extreme value theory, EVT) and empirical approaches based on large numbers of dynamical model simulations.²⁸

- Recently, many CFD analyses which assist mechanical designing have been carried out in every aspect of automotive engineering. While many CFD tools have been developed for ease of use, instances of effective design using these tools are not well discussed in the literature.²⁹

Showing relevance in relation to recent developments

- The concept of heavy-users in a consumer product category has been important to marketing researchers for decades.³⁰

- The recent development of cold-hardy and disease-resistant grape cultivars has enabled rapid expansion of the wine industry in northern states in the United States.³¹

Simple Past vs. Present Perfect- Consider the following excerpts and make note of the verb forms they use. What are some reasons for selecting present perfect or simple past?

- Although some fauna crossing structures have been designed specifically for certain taxa, most are installed for larger mammal species, especially deer and carnivores. Nonetheless, many species of herpetofauna have been detected using both underpasses and overpasses and have taken advantage of existing drainage culverts and water flow infrastructure. Among the most abundant and successful crossing structures are specialised amphibian tunnels especially common in Europe which, when used in conjunction with guide fencing, have significantly reduced road kill rates and enhanced adjacent populations.

---

Herpetofauna use of fauna overpasses is less well studied, with the important exception of the famous Groene Woud in the Netherlands (50m wide, 65m long, and spanning a major motorway), which was designed specifically to provide habitat and connectivity for local amphibian populations. An important component of the Groene Woud was the provision of a series of ponds and waterways across the length of the overpass. The maintenance of such necessary environmental conditions requires specialised pumping and ongoing management, yet resulted in the establishment of six amphibian species.  

- Marine reserves have received increasing support at local, national and global scales, such as promising approaches for rebuilding depleted populations, conserving biodiversity and ensuring the continued flow of services from marine ecosystems, including climate change adaptation. The concept of networks of small coastal reserves for abalone dates back to the beginning of the last century, and such a network was recently completed through the implementation of California’s Marine Life Protection Act. 

**Simple Present**- The simple present can be used to refer to your own paper, to describe things that are generally true, to elaborate on theories, to make claims and generalizations about findings, and to give a broader picture.

**Referring to your own paper** (what it says, explains, does, argues, describes, illuminates, discusses, asserts, investigates, elaborates, endeavors to do, questions, attempts to discover, etc.) Using the primary dataset collected in 2012 from 82 wineries currently operating across 10 northern states, this study examines how state-level policies are influencing the revenue of the emerging wine industry. 

This paper discusses a CFD analysis system, SC/Tetra, which is equipped with an automatic hybrid mesh generator, a high-speed flow solver and a state of the art postprocessor.

Firstly, the paper examines the different stages through which both Palma and the island are discursively constructed as opposed entities in the travel accounts in Mallorca’s first stages of tourism. A special focus is given to the discursive and ideological tools deployed to embellish

---

upon or belittle the city and the island. Finally, I suggest that the images proposed by travelers in their accounts a hundred years ago evolved into today’s imagotypes of the island and its city.\textsuperscript{36}

The aim of the work presented here is to highlight common shortfalls in this fix and forget approach and in particular in the response prioritisation task. Ways that these shortfalls can be avoided, based on knowledge from decision theory, are presented.\textsuperscript{37}

Making general statements and descriptions, explaining theories, describing things that are apparent

By focusing on the demographics, attitudes, and behaviors of these segments of consumers, marketing researchers can better understand what motivates them and consequently develop promotions that will encourage continued, and perhaps increased, product purchases.\textsuperscript{38}

Many marketers are familiar with the concept of the Pareto Effect, which states that a certain percentage of consumers purchase a higher percentage of a product category. In general, this is referred to as the 80/20 rule, in which 80\% of the product or process is a result of 20\% of the consumers or effort.\textsuperscript{39}

When a critical portion of a community is immunized against a contagious disease, most members of the community are protected against that disease because there is little opportunity for an outbreak. Even those who are not eligible for certain vaccines—such as infants, pregnant women, or immunocompromised individuals—get some protection because the spread of contagious disease is contained. This is known as “community immunity.”\textsuperscript{40}

Ectosomes are derived from the cell membrane and vary in size from 100 to 1000 nm. Exosomes, with a diameter in the 30 to 100 nm range, are released when cytoplasmic multivesicular bodies fuse with the plasma membrane. At least some MVs are endowed with prothrombotic cargo molecules derived from their cell of origin. The presence of these entities in the circulation potentially explains how thrombotic events occur at sites remote from the primary tumor or metastases.\textsuperscript{41}


\textsuperscript{40} “Community Immunity” http://www.vaccines.gov/basics/protection/

Stating the importance or relevance of a certain area of research

Gaining a better understanding of rare weather events is a major research challenge and of crucial relevance for societal preparedness in the face of a changing climate.\(^\text{42}\)

Land-atmosphere interactions play an important role for hot temperature extremes in Europe. Dry soils may amplify such extremes through feedbacks with evapotranspiration.\(^\text{43}\)

Defining terms

A ‘differential warming of winter temperature extremes’ is defined as the difference between the warming in the warmest and coldest winter temperatures expressed through 100-year return levels.\(^\text{44}\)

Best available condition is a term coined to capture the reality of selecting sites in reference condition, i.e. sites that are not affected by human-induced stressors for bioassessment purposes and recognises that almost all accessible sites have been subject to some form of human-induced stress.\(^\text{45}\)

Accordingly, we define misperceptions as cases in which people’s beliefs about factual matters are not supported by clear evidence and expert opinion—a definition that includes both false and unsubstantiated beliefs about the world.\(^\text{46}\)

Referring to a graph or chart

This chart shows, this equation solves for...

In the illustration below, the top box depicts a community in which no one is immunized and an outbreak occurs. In the middle box, some of the population is immunized, but not enough to confer community immunity. In the bottom box, a critical portion of the population is immunized, protecting most community members.\(^\text{47}\)

Pavement regularity is normally defined by means of the evaluation of the differences between the points’ elevation on the real surface with respect to an ideal reference plan. To allow simple


\(^{47}\) “Community Immunity” http://www.vaccines.gov/basics/protection/
measurement processes for this characteristic, it is easy to refer to some linear alignments (surface profiles), as Fig. 1 shows. 48

The time series below shows the five-year average variation of global surface temperatures from 1884 to 2014. Dark blue indicates areas cooler than average. Dark red indicates areas warmer than average. 49

**Future Tense**- This is the tense that is used to make predictions, forecasts, recommendations for future research, or to speculate on the impact of your research.

- It is anticipated that the model will be useful for design studies directed toward improving the efficiency and pollution characteristics of internal combustion engines. 50

- Whilst overturning these development restrictions may incentivise new economic activity that will have short term benefits to the construction and development sector, it will do little to adjust property prices to the future risk. 51

- For example, an overwhelming amount of work, given adequate resources, will not lead to burnout. If, however, the job requirements are overly demanding – such as an emergency room surgeon overwhelmed with the number of patients – and the equipment and supplies to perform surgery are lacking, resulting in inefficiency and a backlog of patient appointments, then burnout will predictably occur. 52

- The results of our study will help guide the development of policy, planning and management to support wetland conservation both locally and further afield. Information from this study will provide a baseline dataset for future wetland monitoring undertaken to determine the effectiveness of conservation actions and the impacts of climate change. 53

---

49 “Global Climate Change.” NASA http://climate.nasa.gov/vital-signs/global-temperature/
Present Continuous / Present Progressive- to express something occurring at the same moment as the writing of the paper.

- Currently, tens of thousands of drivers are operating vehicles without a license or insurance.

- Arctic ice is rapidly disappearing, and the region may have its first completely ice-free summer by 2040 or earlier. Polar bears and indigenous cultures are already suffering from the sea-ice loss.  

Exercise: Using the information below, construct sentences in the proper tenses in order to compose an abstract for the study described.

Infrasound: inaudible sound created by wind turbines and other machines, may cause stress, vomiting and other health problems (effects and extent unknown)

Problem: Extensive research on noise pollution and human consequences, little or no studies on infrasound. Most studies from the military, not academics

Methodologies: Health evaluation for people living within 2 km of a major wind farm. Blood pressure, pulse, breathing and oxygen saturation and mental health assessment on windy vs. calm days.

Results: some health differences, blood pressure higher for children on windy days, some vomiting from nearest residents, possible interference from other contributing factors, unmeasured: visual impact of wind turbines and the flashing light caused by shadows.

Conclusions: unsure whether infrasound produces ill health. Impossible to determine whether other lasting, long-term effects exist, such as cancer or mental health deterioration.

Recommendations: Future studies with a wider scope and longer period of time.

54 “Global Warming Fast Facts.” National Geographic Magazine 
Passive Voice

Passive voice is a construction that is used often in scientific and technical writing. Passive voice is often used in methodologies and results sections, as well as process writing. Although passive voice can give your writing a professional and unbiased tone, overusing it can make your writing seem stiff and dry, or even awkward. This is why it is important to use your better judgement in selecting whether to use active or passive voice.

How to form it:

a conjugation of ‘to be’ + past participle

Mistakes were made.
Experiments are conducted.
Answers are being sought.
New pathways were discovered.
Future research will be conducted.

Passive voice can be used in any tense:

present is made
simple past was made
present perfect has been made
future will be made
present progressive is being made
past progressive was being made

Change the following sentences from active to passive voice

1. Somebody updated the dictionary to include the new words.
2. They rejected the project funding because it lacked sufficient background research.
3. They give this award to research groups that publish in a recognized journal.
4. I didn’t realize that somebody recorded our conversation.
5. They were testing weapons in environmentally protected areas.

It is essential to know the irregular past participles in order to use the passive voice correctly, particularly if you write in a word processing program that does not automatically correct English. For reference on irregular participles, see, for example: Purdue Online Writing Lab- Irregular Verbs: https://owl.english.purdue.edu/owl/resource/605/01/
Present tense

Whenever possible, excess pollution must ______________________ (abate).

The cloth ______________________ (tear) into strips and then dyed to match the previous batch.

Meetings _________________ (hold) regularly to inform the stockholders of the progress of the company.

These vials contain delicate proteins and under no circumstances should they _______________ (shake).

The most interesting information about our biology __________________ (hide) in our DNA.

Simple past

The model described above ______________________ (create) for this specific project.

The samples _________________ (transfer) to the incubation chamber before they _________________ (examine).

The temperature _______________ (measure) and _________________ (adjust) when necessary.

Present perfect

To date, methods for measuring the overall damage caused by tsunamis _________________ (develop).

It is not clear whether this species is entirely extinct, but the fact remains that it _________________ (see) in over 25 years.

Several self-driving cars _________________ (design) in the last decade, but so far, they __________ not_________________ (succeed) in reaching mass production.

When to use the passive voice: It is important to consider when the passive voice is preferable or appropriate. The passive voice is acceptable when you want to focus on the object or recipient of the action rather than on the actor.

1. The performer is obvious, irrelevant, or unknown.
   - Much of the heat produced by coal power plants is wasted.
   - The first edition of Jane Eyre was published in 1847.
2. The performer is less important than the action (or experiment)
   - The honey bees were kept in a humidified chamber at room temperature overnight.
   - The solution was heated to 90°C for approximately 30 minutes and then allowed to cool.

3. The recipient is the main topic.
   - Carbohydrates are produced by green plants in the presence of light and chlorophyll.
   - Evaporation was achieved by heating water until it became vapor.

4. Avoiding the use of ‘I’ and “we” in scientific writing.
   - I applied roughness both upstream and downstream of mid-chord on the suction surface.
   - Roughness was applied both upstream and downstream of mid-chord on the suction surface.56
   - We performed the experiment in a sterile environment using standard protocols.
   - The experiment was performed in a sterile environment using standard protocols.
   - In the following experiment, we used the feline cell line, W9, to evaluate cell growth in the presence of the growth factor.
   - The feline cell line W9 was used to evaluate cell growth in the presence of growth factor.
   - I cultured the cells for 48 hours in media that I modified.
   - Cells were cultured for 48 hours in modified media.

**Common problems:**

1) Mistranslation of werden

Es wird gemacht ≠ It is getting done. → It is done.

2) Misuse of verb conjugations (past participle)

It will is delivered. → It will be delivered. It will get delivered.

The idea was putted forward.→ The idea was put forward.

3) Subject-Verb Agreement

The criminals was locked up.→ The criminals were locked up.

4) Misuse of the present progressive passive

The batches are being processed as soon as they are received. → The batches are processed as soon as they are received.

The project is getting finished when the final surveys are getting collected. → The project will be finished when the final surveys are collected.

Correct the sentences below to correct misuse of the passive voice and other issues.

- The project will be getting done on Friday.
- This hypothesis has been repeated in a study that has been conducted in 1994.
- Jackets and hats can be hang up over there.
- The project being held up by so much red tape.
- For this project, our numbers were being processed on a supercomputer.
- The materials have not always been use in the way they were intended to be.
- The payment was send by mail.
- The engineers are setting up the calculations.
- Blades are getting turned by the wind and the rotor is connected to a shaft.
- Because everything is build out of one material, recycling is getting much more easier.
- In this paper there is presented a novel approach to understanding spoken Arabic.

Consider the uses of passive voice in the following excerpts. What is the purpose of passive voice in these sections?

Both similarities and differences in these different types of review are identified and their implication in the student context assessed (notably, as to the exclusivity of the visitorial jurisdiction in the case of chartered universities). Finally, it is argued that the compatibility of student rules with students' human rights may be relevant to review in contract law as well as in public law as a result of the very inclusive nature of the grounds of this review.  

The purpose of this study was to uncover the lived meaning of quality nursing care for nurses practicing in acute care hospitals. This lived meaning was revealed through analysis of practicing nurse interviews using van Manen's (1990) hermeneutic phenomenology, a research approach designed to explore and uncover the lived meaning of pragmatic experiences. The research

---

question asked: "What is the lived meaning of quality nursing care for practicing nurses in the USA?" Participants were 12 nurses practicing on medical or surgical adult units at general or intermediate levels of care within acute care hospitals who participated in semi-structured interviews. Emerging themes were discovered through empirical and reflective analysis of audiotapes and transcripts.  

This study looked at 73 participants in a four week treatment program for depression at a small holistic wellness center. Participants were randomly assigned to either a control group that received traditional mental health counseling alone, or an experimental group that also received distance Reiki. Because distance Reiki was used rather than the more common hands-on Reiki, neither the clinicians nor the participants knew whether they were receiving Reiki. A quantitative experimental design was employed in which participants rated their level of depression at the start and the conclusion of treatment using the Beck Depression Index self-report form. 

Read the following awkward uses of passive voice. Can you alter the sentences to make them clearer?

In Fig. 2, different cases of surface profile irregularities, in comparison to an ideal flat and level profile, are shown.

Over a gearbox the generator gets turned and is producing electricity.

On a cliff there is built a very tall column with a turbine in it. A very important point is that the column and chamber are so connected that no air can pass through. If a wave is coming under the chamber it pushes the air through the column. It could happen that animals like fish could be hurt by the pushing waves or lose a lot of space to live.

By employing core analysis and advanced methodologies such as NMR measurements, CT scanning images and ultracentrifuge the characterization of reservoir including the effects of overburden pressure, pore size distribution, capillary pressure, pore structural design, porosity, permeability and water saturation in heterogeneous carbonate reservoirs are determined. 

---

The following section has been written in active voice, but passive voice would be more appropriate in some sentences. Change the sentences from active to passive, when preferable.

Wind turbines operate on a simple principle. The energy in the wind turns two or three propeller-like blades around a rotor. The main shaft connects to the rotor, which spins a generator to create electricity. Engineers mount wind turbines on a tower to capture the most energy. At 100 feet (30 meters) or more above ground, they can take advantage of faster and less turbulent wind. We can use wind turbines to produce electricity for a single home or building, or people can connect them to an electricity grid for more widespread electricity distribution.

Blades lift and rotate when wind blows over them. The generator produces electricity. Wind direction determines the design of the turbine. The gearbox connects the low-speed shaft to the high-speed shaft and increases the rotational speeds from about 30-60 rotations per minute (rpm), to about 1000-1800 rpm; this is the rotational speed most generators require to produce electricity. The pitch system turns blades out of the wind to control the rotor speed, and to keep the rotor from turning in winds that are too high or too low to produce electricity. The anemometer measures the wind speed and transmits wind speed data to the controller. The yaw drive orients upwind turbines to keep them facing the wind when the direction changes.
Downwind turbines don’t require a yaw drive because the wind manually blows the rotor away from it. The brake stops the rotor, mechanically, electrically or hydraulically, in emergencies.  

A note on passive voice as a method for avoiding “I” and “we”: Traditionalists often claim that “I” and “we” have no place in academic and scientific writing. However, this is no longer a strict rule. Occasionally, attempts to remove the human element from research lead to awkward passive voice and a robotic tone. Researchers who choose to write in the first person may help to humanize their field and make it more accessible to non-experts. Furthermore, some researchers prefer to acknowledge their own role in the research, rather than struggle to hide it. Below are some examples of publications using first person writing.

“We” can refer to the research team

Overall, we predicted that macroinvertebrate richness and diversity would be highest in wetlands located within areas with the highest levels of protection (World Heritage Areas and National Parks), lower richness and diversity in wetlands with less protection from human activities, and lowest in wetlands that are afforded no legal protection, are managed privately or are periodically disturbed (state forests). We also acknowledge that macroinvertebrate richness and diversity may be unrelated to levels of protection or disturbance, but may vary according to changes in climate, topography or hydrological regime across the study region.

During 2009–2010 we sampled individuals larger than 100mm within the reserve at Isla Natividad and off the coast of Point Loma using a non-lethal method through SCUBA, which involved carefully removing the snail from the substrate to take the epipodium sample, replacing the animal at the same spot and waiting for the animal to reattach to the substrate. Genomic DNA was extracted using Nucleospin columns (Macherey-Nagel). We measured genetic diversity and structure employing microsatellite loci because their high polymorphism and mutation rate could help to detect recent small changes in genetic composition.

“We” can mean a community of people, or researchers

Although we know that herbivory is affected by changes in landscape connectivity, there are currently no frameworks with which to assess the implications of such changes on ES. For example, little is known about the type of relationship between herbivory and ES, and how this varies with respect to different services. Improved understanding of the relationships among connectivity, herbivory and ES will therefore allow us to evaluate the effects of changes in

---

landscape structure on ES more thoroughly, and to guide future management decisions in a diverse set of ecosystem types.\textsuperscript{65}

To improve education, first, we need a stronger emphasis on the early years. Children from disadvantaged homes start school 19 months behind in their development compared with their peers. Second, we need to focus on the early years of secondary schooling. While primary schools are slowly narrowing the achievement gap, this is not true in secondary education, where too many children who are underachieving at 11 will still be doing so when they leave five years later.\textsuperscript{66}

**The use of “I” can highlight your own authorship of the ideas present in the paper**

In the first section of this study I highlight the necessity of inspecting the notion of urban and island development from the point of view of discourse. The construction of the city and the island through different discourses is at stake here. Secondly, after examining the development of tourism and travel writing on the islands, this paper examines the evolution of the images of the “city” and the “island” understanding their ideological and, in cases, utopian nature. Finally, I suggest two contemporary imagotypes of the island as a produce of the images proposed by travel writers a hundred years ago.\textsuperscript{67}

Using methodology from Hepokoski and Darcy's *Elements of Sonata Theory* (2006), I explore concepts of rotation in Symphony No. 4's opening movement and its interaction with a larger effect of boundary blurring and typological hybridity, manifest as a blending of double- and triple-rotational sonata-form types. I begin by outlining double- and triple-rotational sonata structures—layouts corresponding to Hepokoski and Darcy's Type-2 and Type-3 sonata forms respectively.\textsuperscript{68}

Note: The best way to determine if it is appropriate to use “I” or “we” in your writing is to first check the rules and regulations of the publication or school, then ask yourself whether avoiding the first person makes the writing more awkward, or changes the message you are trying to convey. Write in the best style for your needs.

A B.A., M.A., or Ph.D. thesis is, by nature, a single-author work. If you conducted your research in a group, and want to use ‘we’ to acknowledge this, you need to be sure to identify who ‘we’ represents.


\textsuperscript{66} Adapted from: Steer, Alan. “How can we improve our schools?” http://www.theguardian.com/education/2015/mar/10/improve-schools-leave-teachers


Important phrases for writing research papers

**Introductory sentences**

This study draws on research conducted by ___.

Current research suggests that students perform better when their parents are also enthusiastic about their education.

This study (dissertation, research) / The present work…
- examines the role of nutrition in mental health.
- explores why some birds fly south for the winter while others stay in the north.
- investigates the effects of earthquake dampening devices on overall building costs.
- assesses the impact of environmental stressors on the breeding habits of tree frogs.
- developed and tested the idea that small changes in HR policies can greatly increase employee retention.

The investigator(s) / researcher(s) / research team / I...
- outline(s) how Spanish became a major world language.
- introduce(s) the concept of global climate change as a means for changing public policy.
- extend(s) prior work on systems efficiency.
- examine(s) the relationship between presidential leadership and legislative cooperation.
- identify.../identifies major shortcomings in the regulation of non-profit entities.

Performance Theory is still an emerging topic of discussion / field of study / point of contention…

The purpose of this study is to develop a case study of teaching and learning through an arts-infused curriculum in an exemplary elementary classroom.

To address these issues, this thesis reports on a small-scale study conducted among international students at masters level at the University of Warwick.

In the field of linguistic theory, the relation between thought and language is still an emerging topic of discussion.

This study explores why groups of at-risk youth binge drink.

This report assesses the impacts of snapper spawning spatial closures in 2013/14 on the catch and effort by the commercial and charter boat sectors of the Marine Scalefish Fishery in South Australia.

---

69 This is meant to be a guide to helpful phrases and collocations for research writing, but it is not a comprehensive list. Examples and formats were adapted from http://dissertation.laerd.com/useful-phrases-when-writing-a-dissertation-abstract.php, Science Research Writing for Non-Native Speakers of English by Hilary Glasman-Deal, The University of Manchester Academic Phrasebank (by John Morley) http://www.phrasebank.manchester.ac.uk/, and Presentations on Academic English for Writing by Lucy Blaney-Laible.

**Significance and Background**

*Previous studies have…*

- **failed to** address the need for zero friction lubricants.
- **focused on** deforestation in the Amazon rain forest.
- **ignored** the possibility of radically changing the way the economy functions.
- **not sufficiently investigated the role of** common dust mites in childhood asthma.

*Previous research (extent research, previous studies, or prior studies)…*

- **has /have shown** that many people quote Einstein without ever reading his work.
- **has/ have concluded** that adolescents are capable and mature enough to drive cars.
- **has/ have considered** alternatives to naturally-occurring diamonds.

**There is a need for more research on** language barriers in health care.

**Autism is still not fully understood.**

**It remains unclear why** Stephen Hawking has survived for longer than other sufferers of amyotrophic lateral sclerosis.

**In 1975, researchers discovered / identified / hypothesized that** the level of processing affected how well we remember information.

**According to researchers** in the United Kingdom, thousands of vehicles are vulnerable to keyless theft.

**This study rejects the assumption that** scientists affiliated with major corporations cannot simultaneously conduct unbiased research.

**We develop a method for testing** antimicrobial sprays on surfaces in public spaces, such as restrooms.

This study advances the understanding of the podzolization process.

**To date, no systematic investigation has considered** the overall impact of standardized testing on students’ perceptions of the public education system.

**A review of the literature** reveals a paucity of studies on sexual behavior among senior citizens.

**Literature on** U.S. politics has focused almost exclusively on the two dominating political parties **while ignoring the role of** grassroots politics at the local level.

**Synthesizing** [e.g., name of theories], this research built and tested a theoretical model linking...

This model addresses **significant gaps in the literature**.

**Previous studies have failed to address** the effect of sodium on liver health in relation to water consumption.

**Insufficient research** has been done in the area of politics as performance.

**Although there is extensive research in the field of** heart disease, **few studies have focused on** heart disease **as it relates to** lactose intolerance.

**There is a need for** an improved computational model to **better address** this problem.
Previous studies have failed to adequately address the fact that the mechanism of action of the cells may be manifold and may include all of the discussed processes, including transdifferentiation, fusing and homing.⁷¹

Among ACS patients undergoing invasive management, the use of radial vs femoral access improves outcomes, driven by reductions in major bleeding and mortality, according to trial results from the MATRIX program.⁷²

---

Methodology / Components of research strategy

The data / samples / subject was/ were...

<table>
<thead>
<tr>
<th>abandoned</th>
<th>calibrated</th>
<th>differentiated</th>
<th>inhibited</th>
<th>recorded</th>
</tr>
</thead>
<tbody>
<tr>
<td>accessed</td>
<td>carried out</td>
<td>diminished</td>
<td>initiated</td>
<td>regulated</td>
</tr>
<tr>
<td>accommodated</td>
<td>clarified</td>
<td>displaced</td>
<td>inserted</td>
<td>removed</td>
</tr>
<tr>
<td>accumulated</td>
<td>coded</td>
<td>disposed</td>
<td>inspected</td>
<td>required</td>
</tr>
<tr>
<td>acquired</td>
<td>compensated</td>
<td>distorted</td>
<td>instructed</td>
<td>simulated</td>
</tr>
<tr>
<td>adapted</td>
<td>compiled</td>
<td>documented</td>
<td>interpreted</td>
<td>submitted</td>
</tr>
<tr>
<td>adjusted</td>
<td>compounded</td>
<td>eliminated</td>
<td>inverted</td>
<td>supplemented</td>
</tr>
<tr>
<td>aggregated</td>
<td>comprised</td>
<td>enhanced</td>
<td>investigated</td>
<td>sustained</td>
</tr>
<tr>
<td>aligned</td>
<td>concentrated</td>
<td>estimated</td>
<td>isolated</td>
<td>traced</td>
</tr>
<tr>
<td>allocated</td>
<td>confined</td>
<td>evaluated</td>
<td>labeled</td>
<td>transformed</td>
</tr>
<tr>
<td>altered</td>
<td>confirmed</td>
<td>cultured</td>
<td>located</td>
<td>revised</td>
</tr>
<tr>
<td>affected</td>
<td>consulted</td>
<td>expanded</td>
<td>maintained</td>
<td>verified</td>
</tr>
<tr>
<td>approached</td>
<td>constructed</td>
<td>exposed</td>
<td>manipulated</td>
<td></td>
</tr>
<tr>
<td>approximated</td>
<td>contacted</td>
<td>extracted</td>
<td>modified</td>
<td></td>
</tr>
<tr>
<td>assessed</td>
<td>contracted</td>
<td>facilitated</td>
<td>monitored</td>
<td></td>
</tr>
<tr>
<td>assumed</td>
<td>controlled</td>
<td>factored</td>
<td>obtained</td>
<td></td>
</tr>
<tr>
<td>attached</td>
<td>converted</td>
<td>formatted</td>
<td>plotted</td>
<td></td>
</tr>
<tr>
<td>attained</td>
<td>created</td>
<td>generated</td>
<td>predicted</td>
<td></td>
</tr>
<tr>
<td>attributed</td>
<td>derived</td>
<td>identified</td>
<td>prohibited</td>
<td></td>
</tr>
<tr>
<td>calculated</td>
<td>detected</td>
<td>incorporated</td>
<td>promoted</td>
<td></td>
</tr>
</tbody>
</table>

The test subjects were divided into two groups and their vital statistics were obtained. These were utilized to determine how the study would be carried out.

A general hypothesis was formulated and tested using a double-blind study format. After the samples were collected, they were filtered so that impurities could be removed. Using this new program, we calculated values for several types of vehicles.

We tested these hypotheses using survey response data to measure overall job satisfaction within the context of burnout and overwork.

A 10 point scale was developed to measure the patient’s pain, with 1 being virtually no pain to 10 being unbearable pain.

The researchers incorporated the MATRIX results into an updated meta-analysis that included both pre- and post-RIVAL studies and RIVAL itself.

It was hypothesized that the intense heat would entirely destroy the sample.

Major findings
The findings from the research...
- illustrate how chronic illness interferes with the ability of patients to carry on with full-time work schedules.
- show that the impact of anti-piracy laws on illegal downloading is more complex than previously thought.
- address a controversial belief among practitioners that
The data suggest that schizophrenia results from both genetic and environmental factors.
The results were inconclusive.
As predicted, the quality of the wine decreased significantly when the synthetic corks were introduced.
Contrary to our expectations, most survey respondents did not complete the comments section.
In general/ On the whole the simulation ran efficiently and with a minimum number of errors.
It is apparent…
Using the methods described above, it was determined that temperature not only impacts insect health, but also their breeding behaviors.
The results were divided into two parts. First, the quantitative data was processed. Next, the qualitative data and observations were analyzed.

Discussing Data (Charts, Graphs, Photographs, Diagrams, equations, etc.)
This pie chart breaks down the different types of financial contributions made by corporations to the current presidential candidates.
This diagram outlines the various methods for turning sugar cane into alcohol.
This table lists every response given in the comments section of the survey.
The bar graph in Fig. 4 represents the number of cars per household in Majorca in 1995.
The data gathered in the initial tests suggests / suggest that water temperature is extremely important in determining whale fertility.
The diagram in Fig. 2 illustrates the process of removing bark from logs using a grinder.
A closer look at the data indicates that this decline results from a drop in the labor force participation rate among those individuals classified as physically disabled.
The data generated by this test is / are reported in Table 1.
The available evidence seems to suggest that exercise has little or no impact on feelings of hunger or the overall number of calories consumed.
Chart 4 shows grain yield and straw yield for seven wheat varieties in 2005.
The equation that describes this heat loss is as follows: […]

74 More discussion on the topic of graphs and charts can be found in the section on figures. This section does not include a description for box-and-whisker plots (often used in statistics), but a helpful list of vocabulary can be found at: http://stattrek.com/statistics/charts/boxplot.aspx?Tutorial=AP. For more on describing equations in English, see this extensive list: http://par.cse.nsysu.edu.tw/link/Mathe-pronun.pdf.
For a gene that exists in two alleles, the Hardy–Weinberg equation states that
\((p^2) + (2pq) + (q^2) = 1\)

If we apply this equation to our flower color gene, then…

The following equation describes the oxidation of an acidified solution to sodium oxalate (Na\(_2\)C\(_2\)O\(_4\)) by potassium permanganate (KMnO\(_4\)):

The area of a circle can be determined by the following formula: 
\[ A = \pi r^2 \]

Equations (5) and (6) approximate the original formulas.

A solution of a differential equation is a function which satisfies the equation.

Plasma cholesterol-predictive equations demonstrate that stearic acid is neutral and monounsaturated fatty acids are hypocholesterolemic.

The function \( f \) is defined by 
\[ f(x) = 2x^2 - 5 \]

Let the function \( f \) be defined by 
\[ f(x) = x + 1 \]

This section shows the three-dimensional unsteady form of the Navier-Stokes Equations. These equations describe how the velocity, pressure, temperature, and density of a moving fluid are related. The equations were derived independently by G.G. Stokes, in England, and M. Navier, in France, in the early 1800’s. They are extensions of the Euler Equations and include the effects of viscosity on the flow.

The Navier-Stokes equations consist of a time-dependent continuity equation for conservation of mass, three time-dependent conservation of momentum equations and a time-dependent conservation of energy equation. There are four independent variables in the problem, the \( x, y, \) and \( z \) spatial coordinates of some domain, and the time \( t \). There are six dependent variables; the pressure \( p \), density \( r \), and temperature \( T \) (which is contained in the energy equation through the total energy \( E_t \)) and three components of the velocity vector; the \( u \) component is in the \( x \) direction, the \( v \) component is in the \( y \) direction, and the \( w \) component is in the \( z \) direction. All of the dependent variables are functions of all four independent variables.

The three parameters of the function were: \( N \), the total number of species to be discovered; \( \alpha \), the year of maximum rate of discovery; and \( \beta \) which describes the overall rate of discovery, with a larger \( \beta \) implying a faster rate. This model is stochastic and describes the time between discoveries of species as a renewal process where the mean number discovered as a function of time follows a logistic function.

---

75 “Genotype Frequency” https://en.wikipedia.org/wiki/Genotype_frequency#cite_note-5
Conclusion/ Evaluation

Future implications of this study may include research on the overall health effects of Vitamin D.

More research is needed specifically on the effectiveness of crossing signals in school zones near major roads.

In conclusion, the prototype is still too unreliable for unsupervised road tests, but shows great potential for future development.

It is important to note that not all projects will require a full impact assessment to be carried out.

The findings...

- provide support for the key arguments.
- support the prediction that markets cannot continue to grow indefinitely.
- indicate that turbulent flow occurs more often than expected.
- uphold the belief that...
- support the model.
- offer insights into...
- prompt a re-thinking of current consumer laws.

Based on the evidence / data, it is clear / evident that wetlands are disappearing at an unprecedented rate.

A probability of less than 1 in 1000 is generally considered to be unlikely, so we conclude that something likely did go wrong.

The results indicate the need for more careful policing of contraband.

The inability of other laboratories to reproduce these extraordinary results raises a reasonable doubt that researchers were ever able to produce stem cells through a series of acid baths and mechanical stress.

It appears that vegetated overpasses serve as a form of habitat in their own right.

These findings suggest that student stress levels adversely affect their test outcomes.

Extrapolating from these results, it seems possible that multiple vehicle makers utilized software to deceive emissions testers.

This trend of deforestation is likely to continue, unless arrested by stringent public policy.

It is important to note that the results are suggestive, not conclusive. Unlike previous studies, this project did not include a control group.

Predictions/ Implications

Future studies will need to be performed in which the pathology can be more closely examined.

More research is needed to further the understanding of seizure disorders.

The outcome of this project will inform future policies on customs and border enforcement.

Our most important contribution is a large amount of raw data that has the potential to reveal patterns in human behavior.

Acknowledgements

This research was made possible by a grant from the National Institutes of Health.

Financial support came from Pork Farmers International.
Equipment, facilities, and technical support were provided by the University of Chicago. The researchers wish to thank the Mary Bell Scientific Research Foundation for its generous contribution to the study.

**Disclosing Affiliations or Conflict of Interest**

The researchers are employed by the University of Downtown. In the interest of disclosure, the research team would like to note that test samples were provided by Research Samples, Inc.

Although the author was raised in the community described in this work, he no longer lives there or has personal contact with the participants of this study.

The author of this publication was a consultant to Drug Company, Inc. The terms of this arrangement have been reviewed and approved by the University of Stuttgart in accordance with its policy on objectivity in research.

ML discloses consulting income from the Avian/Pandemic FluRegistry (Outcome Sciences, funded in part by Roche) and from Pfizer/Wyeth and from Novartis Vaccines and Diagnostics. The other authors declare no competing interests.  

Activity: Determine from which section the excerpt comes and focus on the aspects listed.

1) Identify the sections where the writers acknowledge existing research, the shortcomings of that research, and how this study seeks to address this.

An extensive literature addresses citizen ignorance, but very little research focuses on misperceptions. It remains to be seen whether these false or unsubstantiated beliefs about politics can be corrected. Previous studies have not tested the efficacy of corrections in a realistic format. We conducted four experiments in which subjects read mock news articles that included either a misleading claim from a politician, or a misleading claim and a correction.  

Section: ____________________________________________

2) Consider use of passive voice, examples given and tenses used:

The model was based on the atmospheric component of the HadCM3 general circulation model with improvements with respect to the calculation of clouds and convection, and a more realistic coupling of vegetated surfaces with the soil. Since atmosphere-only simulations were conducted, observed sea surface temperatures (SSTs) and sea ice fractions for the observed period (DJF2013/2014) were provided to the model from the Operational Sea Surface Temperature and Sea Ice Analysis (OSTIA) dataset. Further model drivers included the observed atmospheric composition (CO2, CH4, N2O, halocarbons and ozone), natural and anthropogenic emissions of

---


different sulfur species, and solar anomalies. Initial conditions were perturbed in the global circulation model on 1st December for each ensemble member.\textsuperscript{82}

Section: ____________________________________

3) Note how tables and data are referenced, particularly the tenses used and passive vs. active voice.

The results of simulations described in Section 2 for the balanced susceptibility distribution SD3 are displayed in Fig. 1. The symbol in each square indicates whether the group with the highest $R_R$ and the group for which distribution of a perfect vaccine would have the largest impact on $R_e(0)$ are both children 5–17, or both children 0–4, or are different from one another. Tables S1–S3 in the Supplementary Information provide the numerical estimates of $R_R$ and reduction in $R_e(0)$ for each group under each scenario. Results for susceptibility distributions SD1 and SD2 were similar, and are provided in the Supporting information (Figs. S1 and S2, Tables S4–S9).\textsuperscript{83}

Section: ____________________________________

4) Identify contributions and suggestions provided by the authors.

The results of this study contribute to the understanding of the macroinvertebrate component of wetland biodiversity, within a temperate region of the world and more broadly to global wetland biodiversity. Our data come from an understudied region (Tasmania, Australia) and provides macroinvertebrate species and family lists from wetlands in good condition. This information provides baseline dataset which can be used in future wetland bioassessment and monitoring programs. Our results indicate that for Tasmanian wetlands within protected areas, it is local factors that most influence macroinvertebrate richness and composition. Namely, these are the presence of aquatic plants within the wetland, and the lack of human impacts in the terrestrial zone immediately adjacent to the wetland. These results suggest that for these wetlands, the macroinvertebrate fauna will be best conserved by minimal disturbance of proximal lands.\textsuperscript{84}

Section: ____________________________________


Figures in Your Research Writing

As you write, you may wish to represent your data and findings in visual ways. Typically, all of these illustrations are called Figures, and are referred to in-text as Fig. 1, for example. Below, you will find a list of typical figures. Note that although German often uses the term ‘Diagram’ to represent all charts and graphs, this is not appropriate in academic writing in English.  

Table- A table organizes information into columns (vertical) and rows (horizontal)  

Graph- A graph depicts data in a visual form, organized by an X and a Y axis.  

Box and Whisker Plot- used to represent statistical information  

---

85 Many of the suggestions in this section are adapted from: “How to talk about a visual aid.” http://www.lyc-lapie-courbevoie.ac-versailles.fr/ComGraph.pdf  
86 For more on different types of charts and graphs: http://writingcenter.unc.edu/handouts/figures-and-charts/  
Diagram – A diagram is a visual representation of an object or a process. It is not a catch-all word to represent every figure included in your writing.  

Chart – This is a visual representation of data and is sometimes also called a graph (such as a bar chart / bar graph).

Pie Chart – Where parts of a whole are represented in terms of percentages or segments.

Process Diagram – these depict a process or machinery

Venn Diagram – Usually circular sections with overlapping parts

---


91 Graph of sharks caught in Queensland's Shark Control Program (by type) July 1997- June 2014, Creative Commons Open Source Media. https://commons.wikimedia.org/wiki/File:Graph_of_sharks_caught_in_Queensland%27s_Shark_Control_Program_%28by_type%29_July_1997-_June_2014.PNG

92 By Philippe (WMF) (Own work) [CC BY-SA 3.0 (http://creativecommons.org/licenses/by-sa/3.0) or GFDL (http://www.gnu.org/copyleft/fdl.html)], via Wikimedia Commons


94 Homograph homophone venn diagram. Wikimedia Commons (Open Source) https://upload.wikimedia.org/wikipedia/commons/e/e7/Homograph_homophone_venn_diagram.png
Flow Chart - Used to represent if/then scenarios and processes

Discussing Graphs, Charts and Diagrams

When discussing figures in your own writing, the present tense is virtually always used. However, when using a graph to describe historic events, the past tense may be appropriate.

Incorrect / poor style: The trend is increasing as the numbers are going up. (No need for present progressive)

This positive trend indicates a likely connection between the two variables.

This diagram illustrates the process of carbon filtering in large-scale energy plants.

This graph demonstrates how fatalities decrease when the flu vaccine is administered to the majority of the population.

This chart organizes the number of tests taken by students per classroom each decade.

As shown in Table 1, chickens tend to lay more eggs when the weather is warm and sunny.

The results of the initial simulation are shown in Figure 1.

The respondents were primarily male and middle aged (Fig. 10).

As demonstrated in Figure 11, presidential approval ratings decreased each time the country sent troops into battle. Note the use of past tense to describe historical events.

---

95 Lamp Flowchart. May, 2006. (Open Source)
Some important vocabulary for describing graphs:

<table>
<thead>
<tr>
<th>Amount</th>
<th>Connection</th>
<th>Conclusion</th>
<th>Change</th>
<th>Parts of the Graph</th>
</tr>
</thead>
<tbody>
<tr>
<td>significant</td>
<td>correlate</td>
<td>demonstrate</td>
<td>rises</td>
<td>horizontal</td>
</tr>
<tr>
<td>insignificant</td>
<td>correspond</td>
<td>show</td>
<td>decreases</td>
<td>vertical</td>
</tr>
<tr>
<td>miniscule</td>
<td>connect</td>
<td>reveal</td>
<td>increases</td>
<td>axis (X and Y)</td>
</tr>
<tr>
<td>substantial</td>
<td>anomaly</td>
<td>prove</td>
<td>sharply</td>
<td>point</td>
</tr>
<tr>
<td>double, triple</td>
<td>cause</td>
<td>result</td>
<td>plateau</td>
<td>line</td>
</tr>
<tr>
<td>quarter, third</td>
<td>direct</td>
<td>confirm</td>
<td>climbs</td>
<td>trend</td>
</tr>
<tr>
<td>almost</td>
<td>match up</td>
<td>uphold</td>
<td>sinks</td>
<td>grouping</td>
</tr>
<tr>
<td>approximately</td>
<td>outlier</td>
<td>support</td>
<td>holds constant</td>
<td>figure</td>
</tr>
<tr>
<td>nearly</td>
<td>trend</td>
<td></td>
<td>stabilizes</td>
<td>cluster</td>
</tr>
<tr>
<td>rather</td>
<td>spurious</td>
<td></td>
<td>rises</td>
<td></td>
</tr>
<tr>
<td></td>
<td>overall pattern</td>
<td></td>
<td>falls</td>
<td></td>
</tr>
<tr>
<td>deviation</td>
<td></td>
<td></td>
<td>positive</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>negative</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>escalate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>decline</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fluctuates</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>unstable</td>
<td></td>
</tr>
</tbody>
</table>

Prepositions:

Rise or decrease **by** indicates the amount of change.

Rise or decrease **to** indicates the final level.

Rise or decrease **from A to B** indicates the initial and final levels.

Hold constant **at** indicates the level.

Fluctuates **between** A and B indicates the upper and lower limits of the fluctuation.

---

96This section does not include a description for box-and-whisker plots (often used in statistics), but a helpful list of vocabulary can be found at: http://stattrek.com/statistics/charts/boxplot.aspx?Tutorial=AP. For more on describing equations in English, see this extensive list: http://par.cse.nsysu.edu.tw/link/Mathe-pronun.pdf.
to cause something to

to indicate, show, prove, suggest, demonstrate, uphold (the theory) that

match up, correlate, connect with/to

deviate from

**Label the following graph** using some of the following vocabulary: reaches a peak, trough, bottoms out, declines rapidly, climbs, increases, plateau
Use the vocabulary provided earlier to describe this graph. It represents U.S. employment from 1920-1940.\footnote{CC BY-SA 4.0-3.0-2.5-2.0-1.0 (http://creativecommons.org/licenses/by-sa/4.0-3.0-2.5-2.0-1.0)}, via Wikimedia Commons

Write the appropriate preposition in the blank in order to complete the sentence.

The line stabilizes __________ 10%.

The amount then increases _______________ 50 shares.

The overall quantity then decreases ___________ nearly zero.

This point comes very near the trend, but does not fall precisely __________ the trend line.

Points in time are represented ____________ the X axis.

\footnote{LucyBlaney-Laible, Ph.D., 2016}
Discussion questions:

Is correlation the same as causation?

What is a spurious correlation? ⁹⁸

What type of figures appear most frequently in your research? Why do you utilize these visual elements? How do they convey the data effectively?

⁹⁸ For some entertaining graphs showing spurious correlations, see: http://tylervigen.com/spurious-correlations.
Abstract Writing for Publications and Conferences

Abstracts are an excellent format for practicing scholarly writing in English because they are condensed versions of the broader project. Writing a clear and attractive abstract is essential to promoting your own work as a scholar. 99

- An abstract is a compact, concise version of your paper. An abstract:
  1) Sets up your research
  2) Attracts people to your presentation or paper
  3) Uses key words and phrases so that your research is easy to find
  4) Gets you into conferences
  5) Summarizes, but also advertises

- An abstract is not: a cut-and-paste selection directly from your paper; it is its own, separate piece of writing.

In an abstract based on a **scientific process** (experiments, observations, etc.), the following elements are essential:

1) **Importance / Justification / Relevance**: what is the importance of the research? Where does it fit into the wider field of study? Does it satisfy a need for something, or address a lack of scholarship on a particular topic? Is the topic timely or urgent? Does it have great potential? Why would a reader be interested in the article or paper?

   One means of conserving wetlands is to designate the area around them as ‘protected’. Although many different types of protected areas exist, ranging from international (Ramsar-listed) to local importance, there is little information on how the type of protection influences biodiversity conservation. Studies of the effectiveness of protected area systems are a priority, if we are to understand their importance and design systems effectively. 100

---


2) **Objective:** What problem or shortcoming does this work attempt to solve? What is the main focus? What are its objectives or goals of the paper?

A review of the literature has shown that the majority of experimental research on the effects of surface roughness on turbine blades has been conducted using profiles which were completely covered with roughness. The objective of the present study is to establish a database of profile loss and flow deflection data for a current turbine profile design that is partially covered with surface roughness.  

3) **Methodology:** What approach does the project take? How is the problem addressed? How were the experiments or observations carried out? How was evidence collected and processed?

Four experimental microstructures were developed, containing austenite grains with different sizes, shapes, and surrounding phases. The Fine microstructure had thin elongated austenite laths between fine bainitic ferrite laths, the Coarse microstructure had elongated austenite grains between coarser bainitic ferrite laths, the Equiaxed microstructure had equiaxed austenite grains in a matrix of equiaxed ferrite and the Acicular microstructure had elongated austenite grains surrounded by recovered ferrite laths.

4) **Results:** Some abstracts of scientific works may include specific data on the results of the project. Other abstracts may discuss the findings more generally.

Minimizations done using second order algorithms (truncated Newton) were found to be more sensitive to input perturbation than first order algorithms (conjugate gradient). Tethering protocols were capable of completely eliminating output spread. Application of perturbed initial conditions to molecular docking showed novel effects leading to the new concept of receptor model bias.

MeHg concentrations were significantly higher during both the breeding and molting seasons at Año Nuevo than at the other sites. MeHg concentrations were particularly high during the molting season, reaching as high as 9.5 pM, compared with an average of 0.3 pM at comparison sites.

5) **Implications / Impact / Conclusions:** How does this work contribute to the body of literature in the field or on this topic? What recommendations does the author make? What is the potential for future research? What changes should be implemented as a result of the findings of the work? How does this work add to the body of knowledge on the topic?

---


Our results suggest that noise degrades habitat that is otherwise suitable, and that the presence of a species does not indicate the absence of an impact.\textsuperscript{105}

The finding suggests that seal molting contributes a significant amount of MeHg to seawater surrounding breeding colonies.\textsuperscript{106}

Findings of this research contribute to the change management literature and provide advice to public service organizations with respect to managing change. They also fill a void in the literature with respect to the measurement of PORC (Perceived Organizational Readiness for Change) and attitudes toward change.\textsuperscript{107}

Abstracts of papers that are not based on scientific research (analysis of legal, historical or literary texts, persuasive writing, etc.) are usually called descriptive abstracts. Their format is not as regimented as scientific abstracts, but they generally include the following elements (not necessarily precisely divided and not necessarily in this order):

1) Background / literature review: This section sets the scene of the research and may give general background information, or highlight a shortcoming in the existing literature.

Previous studies have attempted to explain the persistence of the haze from a singular perspective, either discussing the source or the solution individually. According to these earlier studies, the persistence of the haze was caused either by poverty and underdevelopment, external debt pressure or flawed public policy.\textsuperscript{108}

2) Relevance / Importance: How does this paper address a lack of research or understanding on a certain topic? Why is it needed?

One of the least understood aspects of Guatemalan history is the manner in which rural history interacts with national politics and government policy. This is especially true of the revolutionary period. Most of the abundant literature on the revolution and its collapse has only dealt with the rural aspects of the revolution in a cursory fashion.\textsuperscript{109}


3) **Objective / Argument / Thesis:** What does the paper aim to do? What perspective does it take?

The purpose of this paper is to inspect the extent of which the different discourses adopted by British travel writers in the beginning of the twentieth century (coinciding with the birth of modern tourism on the island) worked to conform a contemporary vision of Palma and its coastal suburban areas (such as Magaluf or El Arenal) as opposed to the (rural and allegedly ‘authentic’) island.  

4) **Theoretical Perspective:** What theories does the paper use to prove the thesis? What scholars and philosophers have contributed to this perspective?

This study addresses the importance and clinical relevance of Jessica Benjamin's psychoanalytic theories of recognition and identification. [...] Because Benjamin's theory is highly academic and can be perceived as experience-distant, this study attempted to simplify key concepts to make the theory more directly applicable to clinical work. To this end Emmanuel Ghent's writing on the function of submission and surrender was incorporated to illuminate the emotional and transformative experience of recognition and/or a lack thereof.  

**Example Abstracts:** Consider the abstracts below, and identify the purpose of the various sections. Do these sentences provide background information, explain methodologies, establish relevance, give results, make recommendations, or accomplish other tasks?


The emergence of new media, especially social media, has altered the way people access risk information in such a way that they typically do not need to solely rely on the government or traditional media as their primary information source during a national crisis. More importantly, the technical features of user-generated content allow average people to have a say in public affairs. This new open-access information environment, which coexists with traditional media and other new media channels, poses new questions about how risk communication is conducted in the social media era. The present study aims to examine the new risk communication pattern empowered by the emerging social media, in particular, social networking sites, in the context of food safety issues in China. Specifically, this study adopts two methodologies, a web survey and a content analysis, to address the hypotheses and research questions. Study results provide support for a

---

model that establishes positive relationships between microblogging use, risk perception and risk-information sharing. These findings thus underscore the potential power of social media as an efficient tool of risk communication between average Chinese citizens in a media system, one that remains tightly controlled by the central government. The emergence of different subscales of social capital and social support identified by the present study suggests that these two concepts may be interpreted differently across different cultures. Implications of these findings—for citizen-bloggers, government authorities and for social change generally—are fully explored. At the current stage, microblogging sites have mainly been used as venues to vent negative attitudes and emotions regarding food safety crises. Moreover, the risk information that has been shared and spread through microblogs often may not be accurate nor come from credible sources. The study concludes that additional research is needed to help us gain a better understanding of the social capital and social support concepts across different cultural contexts.


Determining the combustion characteristics of combustibles in high-speed trains is the foundation of evaluating the fire hazard on high-speed trains scientifically, and establishing effective active and passive fire precautions. In this study, the double seats in the compartments of CRH1 high-speed trains were used as the main research object. Under different test conditions, including the power of ignition sources and ventilation rates, full-scale furniture calorimeter tests were conducted to study important fire combustion characteristics such as the ignition characteristics of seats, heat release rate, mass loss rate, total heat release, temperature variation, and smoke release rate. The relationships among these parameters were analyzed and summarized into combustion behavior and characteristics, thus providing fundamental data and reference for the development of fire precautions and safety design of high-speed trains. The results in this test are as follows: (i) The double seats of high-speed trains are relatively easy to ignite and susceptible to the fire ground environment. (ii) The combustion temperature in the test apparatus exceeded 600 °C in only 2 min for the larger ignition source. (iii) The heat release rate exceeded 800 kW. (iv) The total heat release resulted mainly from flame combustion. (v) The final mass loss rate was ~30%. (vi) The lowest light transmittance was <25%. (vii) The change process of temperature with time has the same trend as the change process of heat release rate. (viii) Suppressing flame combustion and controlling the smoke generated from the seat materials themselves played key roles in retarding the combustion of high-speed train seats.

In an earlier article, it was established that the rules which govern the relations between universities and their students may find their legal source in prescription, royal charter, parliamentary legislation or contract. This article compares judicial review of student rules according to these different sources, whether this review forms part of public law (the review of byelaws, delegated legislation or the expression of other statutory rule-making powers) or of contract law (as a matter of the fairness of the rules as terms of the student contract or by the inherent qualification of any contractual rule-making power in a university by reference to reasonableness). Both similarities and differences in these different types of review are identified and their implication in the student context assessed (notably, as to the exclusivity of the visitorial jurisdiction in the case of chartered universities). Finally, it is argued that the compatibility of student rules with students' human rights may be relevant to review in contract law as well as in public law as a result of the very inclusive nature of the grounds of this review.

Abstract Building Exercise. Using the following information, build an abstract for the papers described below:

1) Oil Spill Effects on Fish

-Research question\(^{112}\): Are fish communities still showing evidence of spill-related impacts from the February 2001 accidental oil spill which dumped 52,000 litres of diesel oil in Serra do Mar?
-Monitoring of Ichthyofauna communities in five rivers in the region of the spill. Two sites exposed to oil (Rivers A and B), two unexposed (Rivers C and D, control). Water analysis for contamination, collection of samples, analysis
-sites were similar to each other, no major differences
-distribution and species composition of ichthyofaunal communities probably due to environmental differences, not oil exposure.

2) Flora Overpasses

-Roads and traffic have a major ecological impact.\(^{113}\)
-Many mitigation strategies exist: fauna underpasses and overpasses (usually designed with animals in mind)
- No studies on these structures as their own habitat, particularly for amphibians and reptiles


The Compton Road fauna array (Brisbane, Australia) connects two nature reserves.

Aim of this study: to quantify the colonisation of the Compton Road fauna overpass by reptile and amphibian species living in adjacent forests.

Methods: Pitfall sampling at seven sampling sites between June 2005 and February 2010, starting approximately six months after overpass construction, with additional observational detections throughout this period.

Results: higher species diversity and capture rates compared with the forest areas. Species accumulation curves demonstrated a strong and consistent colonisation rate of the overpass throughout the six year monitoring period. Persistent occupation by species on the overpass throughout the six years suggests permanent colonisation of the vegetated structure as an extension of the natural forest habitat.

Conclusions: that the fauna overpass at Compton Road provides suitable habitat for diverse local herpetofauna communities and suggest enhanced habitat connectivity across the road.

Abstract Builder:

What does the background research on this topic do? What benefits has it provided? What groundwork does it do? What has it failed to do?

What is the objective or thesis of your project? What are its main goals? If someone reads this abstract, what is the one element you want that person to remember?

How was the work done? What is the essential information on your methodologies that your audience must know in order to understand your work?

What results came out of the study? Which ones do you want to highlight? Were any of them remarkable or particularly interesting or surprising?

What are the implications? What are the impacts? What remains to be done?

Why would someone want to read your paper in its entirety? What should they learn from it? What would they stand to gain from better understanding your research?
Collocations

Collocations are sets of words or phrases that are usually used together and often just ‘sound right’ to native speakers. (Ex. Fast food sounds better to native speakers than ‘quick food’.) In the following section, common collocations are highlighted. 114

How do we conduct research? 115

First, there are many different kinds of research. There is archival research, which is mostly done in libraries and other repositories of knowledge. There is also field research, which is conducted by observation, usually by anthropologists, sociologists and linguists, who record and analyze their observations. Scientific research endeavors to answer questions by making observations, formulating hypotheses, collecting data or setting up experiments, and then analyzing the results.

One of the most important elements in academia is scholarly dialogue and debate. True scholars must be prepared to present their findings, support their assertions with evidence, and to respond to criticism with reasoned arguments.

When proposing research projects, it is important to locate yourself within the

---


field. This means that you use your literature review to acknowledge previous research and existing publications to demonstrate your background knowledge on the topic. At the same time, you identify the limitations of those studies, and seek to identify your potential contribution to the body of knowledge on a certain topic. In this way, you hope to advance the field of work.

There are many potential pitfalls that emerge when conducting research. First, projects must demonstrate their adherence to professional standards of ethics. Typically, an internal review board or human subjects committee evaluates proposals to ensure that they do not violate the law or university policies. For example, researchers must demonstrate that they are able to protect their subjects’ anonymity and privacy throughout the study.

Additionally, researchers must be aware of potential conflicts of interest. Ideally, researchers are unbiased and objective, rather than beholden to special interests. In the real world, however, total impartiality is difficult to achieve. As a result, it is essential that researchers disclose their affiliations with private companies or other influential groups. Furthermore, investigators need to take care to avoid plagiarism by confirming that published work is their own, and not appropriated from others. When quoting the work of others, researchers must properly cite that work in their writing.

Scientific research should produce verifiable, repeatable results. This means that other researchers following the methodologies described in a study should be able to reproduce similar results. Excellent research also holds up well under peer review. Studies need to be scrutinized by experts in the field before publication. If there is no statistical significance in the findings, or if the analysis is weak, an article may be rejected. If

---

More collocations of research

- This study draws on research conducted by Smith and her colleagues in 2007.
- Although there has been relatively little research on the aerodynamics of skateboards, we believe there is significant potential in this project.
- In the last 20 years, research has provided ample support for the assertion that density is related to buoyancy.
- Current research seems to validate the view that most people buy a car based on looks, not performance.
- Research into antibiotics does not support the view that they can cure viruses.
- Further research in this area may include wind tunnel experiments.
- Evidence for global warming is borne out by research that shows increasing temperatures over time.
- There is insufficient research into cold fusion to draw any firm conclusions about its reliability.
the research is sound, but the proposed journal article is not ready for publication, reviewers may ask the author to revise and resubmit.

Purely theoretical research seeks to further an idea without focusing on immediate practical applications, while more practical research highlights the potential real-world benefits of the findings.

Discussion activity: What type of research do you conduct in your field? How is it carried out? Do you publish the results or present them at conferences? What are some of the most important contributions of your field?
Fill in the blank with the most appropriate word to complete a typical phrase or collocation:

Unusual ______________
The first ______________
A peer-reviewed ______________
Increased by one hundred ______________
_______________ correlation
_______________ studies
_______________ pitfalls
routine _________________
__________ and secondary sources
delicate medical _________________
extremely complicated _________________
relatively short_______________ of time
politically unstable _________________
a wide_______________ of options

**Academic Writing Collocations**

Below, you will find some common collocations found in academic writing. As you review them, consider how they could be integrated into your own writing.

**Give an account of**- In this book, the author gives an account of his experiences during the Civil War.

**Play a central role**- Statins play a central role in the primary prevention of cardiovascular diseases.

**Uphold or challenge a theory**- A single case study may be used to uphold or challenge a theory, depending on the results.

---

Make a significant contribution- This project aims to make a significant contribution to the field of jet propulsion.

Support a claim- Recent research supports the claim that households containing unsecured firearms are more likely to have fatal accidental shootings.

Establish a connection- Recent studies seek to establish a connection between road noise and stress levels in the surrounding animal population.

Propose a theory- Jean-Baptiste Lamarck proposed his theory of the transmutation of species.

Key factors- Increasing positive outcomes of early childhood education depends on several key factors, such as funding, teacher training, nutrition, enrichment activities and political support.

Classic example- In the photograph labelled figure 1, we observe a classic example of Herpes Zoster.

Clear illustration- This basic experiment serves as a clear illustration of Newton’s First Law of Motion.

Strong tendency- Children that grow up in homes with adult smokers show a strong tendency to smoke in their adult lives.

Make reference to- Her writing makes reference to several other great works of literature, including Pride and Prejudice, by Jane Austen.

Raise questions- Despite its initial promise of revolutionizing American education, recent research has raised questions about the effectiveness of Common Core in improving educational standards.

Take into consideration- Although these results appear to be anomalies, we must take them into consideration when drawing our conclusions.

Draw attention to- This organization seeks to draw attention to the importance of community organizing in the fight against poverty.

Draw a conclusion- It is impossible to draw a conclusion about the safety of the medication until all study participants have been examined.

Fall into several categories- Occasionally, it is difficult to find funding for interdisciplinary research because it could fall into several different categories, rather than one clearly-defined field.

Reach a conclusion / come to a conclusion- Researchers have reached the conclusion that primates are more like humans than previously acknowledged.
Relevant aspects - The task of administrators is to consider all potentially relevant aspects of a situation before changing school policy.

Financial support / funding - The National Foundation for the Arts provides critical funding to artists who might otherwise have no source of financial support.

Course of action - Doctors are tasked with diagnosing conditions, and recommending a course of action to solve the problem.

Useful insights into - This study provides useful insight into how marine life can be protected through public awareness.

Point to - All data received from the satellite point to the existence of a black hole nearby.

Critical of - Many contemporary psychologists are critical of Freud’s approach to treating mental illness.

Constitute - Water constitutes 71% of the Earth's surface.

Controversy surrounding - The controversy surrounding the World Trade Organization was apparent in the recent protests.

Pose a challenge / overcome a challenge - The concept of writing argumentative essays tends to pose a challenge to students with little writing experience.

Reveal the shortcomings - This study reveals the shortcomings of previous research and suggests an alternative approach.

Raise the issue of - The councilman raised the issue of increasing tax revenue in order to pay for school improvements.

Apparent - When the program was reviewed in full, the errors were apparent.

Address the issue / address the problem - Although self-driving cars are quickly becoming a reality, they have thus far failed to address the problem of liability in crashes.

Overcome a problem - Several problems must be overcome before we can have reliable, affordable space travel.

Resolution to - The European Union is pressing to find a resolution to the refugee crisis.

Have an influence on - Many of Karl Jung’s theories are not considered relevant in today’s practice, but his work still has a significant influence on today’s scholars.

Provoke - This claim has provoked a heated debate on the privatization of public assets.

Trigger - Global energy shortages could trigger political unrest.
Account for - Any irregularities in the bookkeeping must be accounted for before the audit next week.

Give rise to - It is believed that the El Niño effect will give rise to several unusual weather patterns.

Contribute to - Global warming likely contributes to the melting of the ice caps.

Inhibit - Instability in a developing region inhibits the government’s ability to invest in infrastructure.

Derive from - Many words in English are derived from Greek or Latin.

Have an impact on - The amount of money invested in universities has an impact on the local economy.

Take an alternative approach- Many previous studies have attempted to solve this problem without success, so we propose an alternative approach.

Exercise: Choose 5 of the collocated phrases listed above to write your own example sentences.
Academic Vocabulary

The goal of this section is to use new and familiar vocabulary in context. Some sections focus on fill-in-the-blank, while some are more involved. The objective is to employ the words and become familiar with them, rather than simply memorize them in a vacuum.  

Choose the appropriate word for each blank space.

| demolish | comply | carefully | scheme | collaborate |
| proximity | prone | insufficient | passages | adjacent | reject |
| ample | perpendicular | inadequate | invalidate | indiscriminately |
| preclude | applied | deter | plots |

I will read a few ____________ (parts) from the essay I’ve been working on

Our teacher gave us permission to ________________ (work together) on our reports since we are investigating related problems.

The fact that he earned his degree from a university abroad doesn’t ___________ (prevent) him from pursuing doctoral work here in Germany.

The latest longitudinal studies of child behavior ____________ (made valueless) the results from previous research.

He refused to _______________ (obey a request) with the university’s new smoking ban.

Many Europeans are ____________ (likely) to fall ill when traveling in developing countries, as their bodies are not accustomed to the indigenous bacteria.

There is _______________ (plenty of) evidence that our dependence on carbonized energy sources is on the wane (decreasing).

He didn’t ____________ screen the candidates for his experiment. He chose them rather ____________ (without making any distinctions.)

We’ve had trouble concentrating because of the renovations taking place in the _________ (neighboring) building.

117 Many of the words used in this section are compiled in the Academic Word List (AWL), adapted from: http://www.usingenglish.com/files/pdf/academic-word-list-writing-tips.pdf
City Hall refused to allow the construction of a factory in close _________ (nearness) to the wildlife reserve.

**Choose the correct word from those provided in brackets.**

I did not think that such an innocent alteration could have such serious (repercussions, pseudonyms, downfall) on the outcome of the experiment.

Despite having studied history for nearly a decade, he could not (retain, articulate, do) what he liked most about the subject.

It is not so easy (to retain, to convey, to memorize) highly technical information to lay people in an easily understandable fashion.

Opinions on what the team should do next were so (divergent, perceptible, modified), it was impossible to achieve a consensus.

The rise in the cost of living has (abutted, undermined, tackled) my efforts to save money for a down payment on a house.

American universities are (infamous, renowned, reviled) for their excellent research facilities and libraries.

Some politicians in Germany feel that the introduction of tuition fees will lead to a (veritable, doubtful, untenable) revolution in post-secondary education.

It is imperative to always (cite, write, say) your sources when handing in written work at a university.

Isn’t it a (fallacy, tenet, pillar) to say that because no woman has ever been elected president, no woman is qualified to serve in that office?

Our newest marketing plan (dovetails, assembles, splinters) perfectly with our overall corporate strategy.

**Synonyms- Match each word with a word of a similar meaning**

<table>
<thead>
<tr>
<th>adequate</th>
<th>inferior</th>
</tr>
</thead>
<tbody>
<tr>
<td>notion</td>
<td>comprehensive</td>
</tr>
<tr>
<td>subordinate</td>
<td>compile</td>
</tr>
<tr>
<td>alter</td>
<td>change</td>
</tr>
</tbody>
</table>
**Antonyms** - Match each word with its **opposite**

<table>
<thead>
<tr>
<th>aid</th>
<th>approximate</th>
<th>aware</th>
<th>arbitrary</th>
</tr>
</thead>
<tbody>
<tr>
<td>coherent</td>
<td>brief</td>
<td>confuse</td>
<td>imprecise</td>
</tr>
<tr>
<td>unintelligible</td>
<td>oblivious</td>
<td>traditional</td>
<td>extensive</td>
</tr>
<tr>
<td>predictable</td>
<td>clarify</td>
<td>incorporate</td>
<td>hinder</td>
</tr>
<tr>
<td>logical</td>
<td>inconsistent</td>
<td>exact</td>
<td>accurate</td>
</tr>
</tbody>
</table>
**Prepositions** - Mark the prepositions that correspond with the words listed. After that, write at least five example sentences, using the words and prepositions together appropriately.

<table>
<thead>
<tr>
<th></th>
<th>to</th>
<th>from</th>
<th>of</th>
<th>in</th>
<th>at</th>
<th>on</th>
<th>about</th>
<th>with</th>
<th>by</th>
<th>as</th>
</tr>
</thead>
<tbody>
<tr>
<td>contribute</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>classified</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>example</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>stems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>look</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>result</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>according</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>give rise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>be interested</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>be concerned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>refer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>relies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>abide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>begin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>think</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>differ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>excel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>deal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>equivalent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>specialize</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>depend</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>engage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Write the appropriate **prepositions** into the blanks to complete the sentences.

Increasing gun sales undoubtedly contribute ___ the skyrocketing murder rate in large cities.

These proteins can be classified ___ amino acids.

This is an example from my latest research project. The researchers struggled ____ find an example of this phenomenon in nature.

Our lack of equipment stems _____ the recent university budget cuts.

We can look to the study published in California to disprove any connection between the MMR vaccine and autism. The team looked at the variables to reduce the probability ____ error.

I plan to take a look ___ a book.

This lack of understanding results ____ a failure in the education system when it comes to teaching basic math skills.

The results ____ the study were inconclusive.

According ____ my research, dogs and cats get along much better than previously believed.

Students hope that their ongoing protests will give rise ____ serious reform in the university system.

I am not genuinely interested ____ the project.

His research frequently refers ____ previous studies.

We have to rely ____ the IT personnel to maintain the servers.

Although we have quite a lot of academic freedom, we do have to abide ____ the ethics guidelines put in place by the Review Board.

We begin ____ find the answer when we take a closer look. We must begin __ the beginning.

She began ___ shake after she took the medicine.

We began our presentation ______ a summary of previous research.

All butterflies began _____ caterpillars.

We’ll never finish if we don’t begin ____ time.

She differs significantly ____ her mentor. They differ ____ opinion, perspective and approach to the research question.
How do you excel so much _____ your chosen field? Try as he might, he never excelled ____
driving.

You are going to have to deal ______ your fears before you seriously commit to skydiving.

Some say that plagiarism is equivalent ___ theft.

She specializes ____ difficult legal cases.

That would depend ____ whether the investigators have time to take ____ the case.

She is engaged ____ someone she only met yesterday. It would be a bad idea to engage ___
dirty politics at this stage in the election.

She agrees to show up ____ time from now on. I’m sorry, but I just can’t agree _____ that
perspective.
Vocabulary exercise. Use one word from each column to create sentences that exemplify academic writing.

Ex. The researchers compiled large amounts of data in order to determine its relevance to their study.

This chart highlights the disproportionate amount of plastic polluting the oceans.

The team’s analysis contained several errors, leading the reviewers to reject their article.

She was asked to clarify her hypothesis because her objective was not clear.

abstract accompany accurate/ accuracy/ inaccurate/ inaccuracy adjust affect aid alter/ alteration alternative analysis/ analyze approximate approximation assume/ assumption attach/ attached/ attribute bias/ biased category/ categorize chart cite/ citation clarify/ clarity/ clarification compile/ compilation comprehend/ concept/ conceptual/ conceptualize conclude/ conclusion/ conclusive/ inconclusive conflict/ conflicting content contradict/ contradiction contribute/ contributor/ contribution correspond/ correspondence criteria data/ figures/ statistics differentiate diverse/ diversity draft eliminate/ elimination emphasize/ emphasis ensure error format framework fundamental goal grant guideline highlight hypothesis/ hypotheses/ hypothetical illustration/ illustrate impact imply/ implication indicate/ indicative interpret/ interpretation issue label methodology minimal/ minimize/ minimum modify/ modification norm/ protocol objective option/ optional overall paragraph/ paragraphing precede precise/ precision/ imprecise process proportion/ proportionate/ disproportionate quote/ quotation reject/ rejection relevance/ relevant/ irrelevant scope significant/ significance/ insignificant source specify/ specific straightforward structure/ structural submit/ submission sufficient/ insufficient summarize theory/ theoretical thesis/ theses utilize/ utilization
These words are from a special selection taken from the Academic Word List, focusing on words for science research. A fill-in-the-blank exercise follows each section, but it is important to remember that this exercise alone is not sufficient to build your academic vocabulary. Consider the sections of your writing where each word would be useful.

abstract  
affect  
approach / approachable  
accompany  
aid  
appropriate/ inappropriate /  
accurate/ accuracy/ inaccurate/  
alter/ alteration  
appropriateness  
inaccuracy  
alternative  
approximate/ approximation  
acknowledge/ acknowledgement  
ambiguous/ ambiguity/  
arbitrary / arbitrariness  
adequate/ inadequate/ inadequacy  
umambiguous  
assign/ assignment  
adjust  
analysis/ analyze  
assistance  
advocate  
appendix / appendices

1) If the readings are inconsistent, it may be necessary to ____________ (change) the settings on our instruments.
2) We know that weight loss often ______________ (goes with) depression, but it is unclear whether the relationship is causal.
3) Computer modeling should be used in conjunction with physical wind tunnel experiments whenever possible, not as an _____________ (other option).
4) In order to ______________ (get close to) the topic, it is necessary that the reader have a basic understanding of physics.
5) The hospital provided ______________ (unsuitable) protective gear to its nurses, resulting in two women becoming infected with Ebola.
6) The conclusion of the committee was ______________ (unequivocal).
7) Our lab is understaffed due to ________________ (not enough) funding.
8) Folic acid has been shown to __________ (help) fetal development in humans.

assume/ assumption  
brief/ brevity  
compile/ compilation  
attach/ attached/ unattached/  
category/ categorize  
comprehend/ comprehensive  
attachment  
chapter  
comprise  
attribute  
chart  
concept/ conceptual/
author  
cite/ citation  
conceptualize  
authority/ authoritative  
clarify / clarity/ clarification  
confer / conference  
aware/ unaware/ awareness  
clause  
coherence/ coherent/ incoherent  
bias/ biased

1) Research is often a solitary practice, which is why it is essential that researchers occasionally ______________ (discuss) with their colleagues.
2) This project is _________________(made up) of several smaller studies conducted over the course of more than ten years.
3) He was accused of plagiarism for failing to _____________ (reference) his colleagues’ work, which he had incorporated into his own thesis.
4) A good researcher should be able to ______________ (explain) her work in layman’s terms.
5) The rise of interdisciplinary fields has made it difficult to definitively _____________ (classify) some research as either biology or engineering.
6) If a doctor is being paid by the pharmaceutical company to participate in a clinical research study, there is a great risk that her conclusions will be viewed as _____________ (partial).
7) I am sending the entire article in its final form as an ________________ (supplement) to this email.
1) Unfortunately, this article does not meet our ______________ (requirements) for publication and cannot be considered at this time.

2) An Internal Review Board must examine the proposed study to ensure that the researchers obtain ______________ (permission) from all of the participants before the study begins.

3) Previous studies have determined that infants are unable to perceive the phonetic differences between languages. However, the most recent study in the Journal of Linguistics ______________ (refutes) this claim.

4) The recommendations of the committee ______________ (stress) the importance of hygiene in preventing the transmission of disease in hospital settings.

5) I have completed a ______________ (initial version) of the article I would like to publish, but it still needs extensive editing.

6) The charts and graphs are carefully organized to make it easier for the reader to ______________ (distinguish) the types of data we collected.

7) Because of the ______________ (contradictory) results, it is impossible to make a strong conclusion at this time.

1) It is important to review all results before publishing in order to ______________ (guarantee) their accuracy.

2) The ______________ (aim) of the project is to establish a connection between exposure to infrasound and illness in humans.

3) This research ______________ (seems to show that) excessive fishing causes irreparable damage to ecosystems in the Pacific.

4) Telescopes are essential tools in astronomy, but particularly vulnerable to ______________ (disturbance) from light emitted from cities and other populated areas.

5) The programmers searched for hours, but ultimately could not find the ______________ (mistake) that was causing the program to crash.

6) Figure 7 ______________ (shows) the process of reverse osmosis in purifying water.

7) It is important to ______________ (emphasize) the unique methodologies used in this particular study because they vary significantly from their predecessors.

8) The funding for this project was graciously provided by a ______________ (money awarded) from the Center for Disease Control.
1) The ______________ (range) of this project is relatively limited compared to previous ones.
2) She endangered her test subjects by failing to follow the safety___________ (procedure) agreed on by the research team.
3) _______________(on the whole), results were consistent with those presented by previous studies.
4) I am referring to the first _____________ (writing section) of your second chapter, where you claim that your study will eliminate the need for fossil fuels.
5) Although previous studies have undertaken similar research in the past, the ___________ (research methods) of this study are completely different.
6) In this section, I refer mainly to Einstein’s _____________ (not printed) work.
7) ____________ (exactness) is not always possible in all fields of research, but that does not mean that we shouldn’t strive for it.
8) This paper seeks to demonstrate that Freud’s _____________ (understanding) of childhood behaviors was grossly misguided.
1) Unfortunately, our _________________ (proposal) to the Journal of Architecture was rejected.
2) The writing in this section is so garbled that it is difficult to determine what the ________________ (proposition) is.
3) Anecdotal evidence is not ________________ (enough) to demonstrate causality.
4) Samples of the water were collected at their _______________ (origin) and immediately tested for toxicity.
5) Their project is extremely complicated, but they are able to explain it in a very clear and ________________ (direct) manner.
6) The two buildings look very similar on the outside, but they have major _______________ (physical) differences.
7) The research is excellent, but the ________________ (manner) of writing makes it hard to understand.
8) Although many plastics often end up in landfills, some industries can _______________ (use) plastics to create new products.

**Match the words to their synonyms**

| significant/ significance/ | structure/ structural | summarize |
| insignifican | style / stylistic | theory/ theoretical |
| source | submit/ submission | thesis / theses |
| specify/ specific | subordinate | utilize/ utilization |
| straightforward | sufficient/ insufficient |

| idea | range | dependable |
| accomplish | achievement | substitute |
| gain | conditions | parts |
| examination | method | characteristics |
| evaluation | expert |

| achieve | acquisition | alternative |
| analysis | approach | area |
| aspects | assessment | authority |
| benefit | circumstances | components |
| concept | consistent | |
Fill in the blank with the most appropriate word.

<table>
<thead>
<tr>
<th>corresponding</th>
<th>criteria</th>
<th>deduction</th>
<th>demonstrate</th>
<th>derived</th>
</tr>
</thead>
<tbody>
<tr>
<td>distribution</td>
<td>dominant</td>
<td>elements</td>
<td>equation</td>
<td></td>
</tr>
<tr>
<td>estimate</td>
<td>evaluation</td>
<td>factors</td>
<td>features</td>
<td></td>
</tr>
<tr>
<td>final</td>
<td>function</td>
<td>initial</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) Investigators must meet a rigorous set of ____________________ before being found eligible to conduct the study.

2) The __________________ findings were inconclusive. However, subsequent studies were more successful in detecting patterns in the data.

3) The prototype worked well in wet and foggy conditions, but it remained to be seen whether it would ______________ in heavy winds.

4) Several __________________ must be considered before planning another test of this size.

5) This determines the reading of the position-circle ___________ to position-angle 90° or 270°.

Replace the word in italics with a better term.

<table>
<thead>
<tr>
<th>relevant</th>
<th>requirements</th>
<th>research</th>
<th>resources</th>
<th>response</th>
</tr>
</thead>
<tbody>
<tr>
<td>role</td>
<td>section</td>
<td>select</td>
<td>significant</td>
<td></td>
</tr>
<tr>
<td>similar</td>
<td>source</td>
<td>specific</td>
<td>strategies</td>
<td></td>
</tr>
<tr>
<td>structure</td>
<td>theory</td>
<td>transfer</td>
<td>variables</td>
<td></td>
</tr>
</tbody>
</table>

1) It is impossible to solve the problem because there are too many different aspects.

2) She studies fluid dynamics and often refers to the boundary-layer concept.

3) The set-up of my presentation is divided into three parts.

4) The fundamental modes of heat relocation are conduction or diffusion, convection and radiation.

5) We look into the effects of metal fatigue on brake performance.

6) In the next piece of my paper, I discuss the need for more UN involvement in the Middle East.
False Friends
False cognates (or false friends) are words that sound or look similar in two languages, but have different meanings. Consider the following sentences. How has using the incorrect word changed the intended meaning of the sentence? Correct the sentences so that they make sense.

vor Where is the report we need to present to the board today? I already did that for two weeks. It’s been sitting on your desk.

lernen I can’t go out tonight because I have to learn for a very important exam.

konsequent We expect all of our employees to be consequent in their quality control measures.

bekommen I have been waiting for several days to become the documents we need.

sensible This extremely sensible laser can detect very small movements.

Grad He heated it to over 100 grade and the solution exploded.

Fabrik We need to send the new design to the fabric as soon as possible so they can begin to produce the item by next week.

Konzeption The marketing team developed a conception that should be able to help us with the next quarter.

vital He is nearing retirement and has had some health issues, so he is not so vital anymore.

weil The project must be completed while the funding has nearly run out.

prüfen We have to prove whether the prototype is able to run the software we designed.

defekt Someone hung a sign on the elevator because it was defective.

kontrollieren The water levels must be controlled every hour to ensure that the machine does not overheat.

Technik In our partnership with the engineering firm, we provide the design and they provide the technique.

Expertise We are waiting on the expertise on the part before we can move to the production phase.

Beamers The presentation had to be cancelled when the beamer malfunctioned and no one could see the graphs.

eventuell The new company is eventually at risk of taking on too many projects at once.
We need someone that has the actual information on this type of programming.
What is your meaning on the current politics surrounding global warming?
It is normal to make small failures when you begin a new job.
The patient needs a special medicine to lower her blood sugar.
My sister has decided to look for jobs abroad after her promotion.
Could I see the prospects for our new marketing campaign?
The restaurant near us is organizing a probe for their new wine list.
We are hoping that we can recruit as many people as possible to spend for the new hospital wing.
We would rather not hire a contractor to draw up the new plans. I think we can do that intern.
I have been bringing my own lunch to work instead of going out with colleagues because I am trying to spare some money for a vacation.
The HR department deals with all personal issues.
He is confident he will be accepted to the master’s program because he has received excellent notes.
The doctor is out of his office, but he can be reached on his handy if there is an emergency.
We are trying to find a supplier that only works with fair trade and bio products.
Our marketing department sent out an announcement to let all of our clients know about the upcoming action this weekend.

Additional activity: use the words in italics in English and write sentences in which those words are used appropriately. Ex. Note. He takes careful notes in every meeting to ensure that he remembers what each speaker said.

Further reading: http://www.vocabulary.com/lists/218701#view=notes
When to use the comma

Two things to remember:

1) The rules for commas in German and in English differ.

2) Commas are usually not used before the word “that” in English:

- It is important to note that all instruments must be sterilized before the next surgery.
- I am hoping that you can answer some questions for me.
- He told her that he would be home by 5pm.
- Their research suggested that amphibians were far more sensitive to heat than previously thought and that their environment could hold the key to better understanding their breeding habits.

In academic writing, commas are usually used to

- show cause and effect by separating conditions from their outcome(s)
- separate items in a list, or separate multiple adjectives used to modify the same noun
- separate a dependent from an independent clause
- set off quotations
- make an aside, add extra information or set off a relative clause
- set apart discourse markers (however, therefore, etc.)
- separate thousands in written numerals (1,000), separate a city name from a country, or separate elements in a date

Show cause and effect by separating conditions from their outcome(s)

- If you do not send in your application on time, it will not be considered by the committee.
- When John arrives, we can all leave for the seminar.
- Unless it is an emergency, we do not interrupt the presentation.
- Due to a recent increase in funding, the laboratory was renovated and all new equipment was installed.
- Because of a general dislike for raising taxes, the voters rejected the measure.
- Since the amount of REM sleep that horses require is very small, they do not need to lie down often.
Separate items in a list or separate multiple adjectives used to modify the same noun

- Organic compounds like nitrogen, oxygen, and sulfur typically make up between 6%-10% of crude oil, while metals such as copper, nickel, vanadium and iron account for less than 1% of the total composition.\(^{118}\)
- The research team was prepared for a long, tedious session.
- The solution was mixed, heated, cooled and left in storage for at least one week.

***The Oxford comma: this grammatical practice suggests that the second-to-last item in a list must also be followed by a comma, such as Organic compounds like nitrogen, oxygen, and sulfur typically make up between 6% and 10% of crude oil. Grammar purists argue that the Oxford comma avoids ambiguity, while others claim that it is no longer necessary. It is important to decide one way or the other and to be consistent throughout your writing.

Separate a dependent from an independent clause, or to set off a conjunction (but, and, nor, yet, etc.)

- There was great hope that all of the surveys would be returned, but only 50% of those distributed were mailed back.
- The data was collected easily, but conclusions were illusive.
- The proteins did not survive the process, nor was it possible to salvage the remaining samples.
- Young people have far less real-world experience than their counterparts in the past, yet they possess far more knowledge about technology than ever before.

Set off quotations (some academic publications use a colon : for this purpose)

- As Feldman argued in 1991, “Dogs and cats are only able to get along if they are trained to do so by their owners.”
- “The lesions were particularly painful,” reported one patient in Smith’s (1956) study.

***Note: Grammatical rules for American English dictate that commas preceding quotation marks should be outside and that all punctuation at the end of the quote should be inside of the quotation marks. (Note the period in the first sentence and the comma in the second sentence). British English rules are not as strict on this point.\(^{119}\)

---


\(^{119}\) Some publications now also set quotations apart with a colon if the quotation is formally introduced, or no punctuation at all if the quotation flows with the sentence. *From the MLA Style Manual and Guide to Scholarly Publishing* (3rd edition, 2008):

*Shelly held a bold view: "Poets are the unacknowledged legislators of the World."
Shelly thought poets "the unacknowledged legislators of the World...."
"Poets," according to Shelley, "are the unacknowledged ...."*
Dr. Holmes said, “Political science is an essential element of understanding our electoral process.”
“Political science is an essential element of understanding our electoral process,” said Dr. Holmes.

**Make an aside, add extra information or set off a relative clause**¹²⁰

- Heinmann, who had previously reported no significant results from his studies, suddenly made a breakthrough worthy of significant media attention.
- My cousin, a dedicated communist, refuses to eat dinner with my brother, the banker.
- The test subjects, who were mostly volunteers, were asked to fill out the questionnaire daily.
- Nationally, millions of voters turned out for the general election, while the local election was rather poorly attended.
- Remarkably, the author claims to have written the majority of the book on her iPhone.

**Set apart discourse markers (however, therefore, etc.)**

- A significant amount of work remains to be done, however.
- Despite the lack of access to clean water, the team managed to collect samples from several remote areas.
- Therefore, the results indicate that it is not possible to create stem cells through an acid wash process and that previous findings were erroneous.
- In addition, partial responses and ambiguous responses were eliminated from the data set.

**Separate thousands in written numerals, cities and countries, and elements of a date**

- The servers are able to compute 10,000 equations in twenty minutes.
- The declaration was signed on June 12, 2001.
- He was born in Juno, Alaska.

**Exercise: Add commas if necessary.**

1) The foreman needs approval for the project but the assessor’s office is closed for the week.

2) Our team leader, who is highly qualified in the field of experimental physics, will supervise the design of all experiments.

3) Overall we found that less exposure to sunlight can lead to depression.

4) However, extreme exposure to sunlight can increase the risk of skin cancer dramatically.

¹²⁰ Relative clauses must be set apart by commas, but sentences using that, which or who to identify the subject do not:
The subjects who reported nausea were given an alternative medication. [Not all subjects reported nausea]
The subjects, who reported nausea, were given an alternative medication. [All subjects reported nausea]
5) Environmental distractions such as noise light dust and movement can distract students from their learning.

6) Previous studies have found that early exposure to infrasound may lead to balance problems and hearing loss later in life.

7) She won 971000 in the lottery last week.

Paragraphs:

Waste created by a typical coal plant includes more than 125000 tons of ash and 190000 tons of sludge from the smokestack scrubber each year. Nationally at least 42 percent of coal combustion waste ponds and landfills are unlined. Toxic substances in the waste which include arsenic mercury chromium and cadmium can contaminate drinking water supplies and damage vital human organs and the nervous system. Ecosystems have also been damaged sometimes severely or permanently by the disposal of coal plant waste.

In coal power plants with once-through cooling systems once the 70 to 180 billion gallons of water have cycled through the power plant (for a typical 600-megawatt plant) they are released back into the lake river or ocean. This water is hotter (by up to 20-25° F) than the water that receives it creating "thermal pollution" that can decrease fertility and increase heart rates in fish.

Typically coal power plants also add chlorine or other toxic chemicals to their cooling water to decrease algae growth. These chemicals that the plant produces are also discharged back into the environment.121

The original intent of savings banks was to teach popular classes the habit of saving increase the liquidity of capital and spur economic growth. Government savings banks were founded in France (1818) Austria (1819) and several German states (1835) while government guarantees provided incentives for a variety of private community cooperative and mutual savings banks in the Netherlands England Italy and the United States.

In 1906 almost a century after the Caisse d'Epargne was founded in France Charles Gide argued that savings banks should serve a limited role comparable to piggy banks in terms of collecting small amounts of capital and savings. What happened? The first Brazilian government savings bank (Caixa Econômica e Monte de Socorro) was founded in 1860. If savings banks are temporary and limited character why are an estimated 70% of Brazilians still sem conta (bankless) without checking accounts savings deposits or bank cards?

In June 2004 the Caixa maintained 60402 employees 2013 branches more than R$ 82 billion in deposits and over R$ 166 billion in assets.122

121 "Environmental impacts of coal power: wastes generated" Adapted from: http://www.ucsusa.org/clean_energy/coalvswind/c02d.html#.VhDqXCtMebE
Bibliography

**Authentic Texts** 123


123 These texts are also cited in the sections in which they appear.

Academic Writing Handbook prepared by Lucy Blaney-Laible, Ph.D., 2015  
Page 91 of 96


“What is Crude Oil? A Detailed Explanation on this Essential Fossil Fuel.” Oil Price.com

http://ojls.oxfordjournals.org/content/21/2/193.abstract


**English Learning Guides**

“10 Steps to Writing an Effective Abstract.” San Francisco Edit. www.sfedit.net


“How to Teach Conditionals.” About Education. http://esl.about.com/od/teaching_tenses/a/How To-Teach-Conditionals.htm
Morley, John. *The University of Manchester Academic Phrasebank*
http://www.phrasebank.manchester.ac.uk/, and

http://www.luizotaviobarros.com/2013/04/academic-writing-useful-expressions.html

http://www.ucdenver.edu/academics/colleges/CLAS/Centers/writing/resources/Documents/Han
outs/Principles%20of%20Scientific%20Writing.pdf

“Teaching Conditionals for ESL” http://esl.yourdictionary.com/lesson-plans/Teaching-Conditionals-for-
ESL.html

Useful Phrases When Writing a Dissertation Abstract. LAERD. Lund Research.

Verb Tenses. University of North Carolina Writing Center.
http://writingcenter.unc.edu/handouts/verb-tenses/

“Writing an Abstract.” Academic Skills: University of Melbourne.
http://services.unimelb.edu.au/__data/assets/pdf_file/0007/471274/Writing_an_Abstract_Update_051112.pdf