

Computer-assisted Research Writing

Advanced search techniques can be used to check grammar and expressions in English writing in your field.

- If you have a general English grammar problem try an Advanced **Google** Search.
- If you have an English *academic* grammar problem specific to your field, use an Advanced **Google Scholar** Search.
- If you want to check how grammar and words are used specifically in your field, use an **Adobe Acrobat Reader** Advanced Search. See page 9.

2.1 Internet Grammar Search: Advanced Google Search

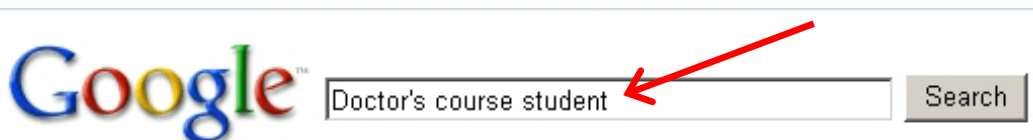
Advanced internet searches can help you to find grammar mistakes by comparing samples of your writing with sentences on the Internet. In short, you can use the Internet like a database of example phrases and sentences.

Skill 2.1.1 Understand the difference between a “keyword” and an “exact phrase” search using a basic Google search

Korean students and faculty sometimes describe a Ph.D. student as a “Doctor’s course student”.

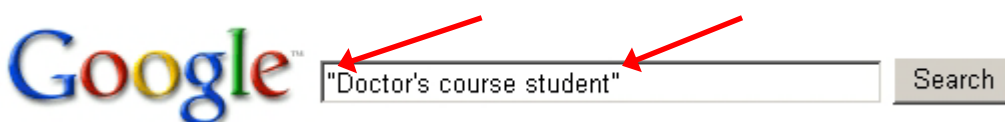
Is this standard usage? Use a Google Search to find out.

- 1) Open up your web browser to <http://www.google.com/> or <http://www.google.co.kr/>
- 2) First, type in the text below in the search box and click [Search (검색)]



- 3) You will see a large number of hits: “Results 1 - 10 of about 2,590,000 for Doctor's course student”

- 4) Now type in the same text with “quotation marks” [따 음표] around it and click [Search (검색)]



5) You will get only the results with the words exactly in this order and no other combination. Results 1 - 10 of about 504 for "doctor's course student". The quotation marks change the search from a "keyword" search into a "match exact phrase only" search. In short, it is a completely different search. This is a powerful function that makes internet searching much more efficient.

Skill 2.1.2 Evaluate the context of the search results

TASK 1: Is this sentence correct? (The answer is on page 9)

▪ **She is a doctor's course student.**

- 1) Examine the key words. Are there any unnecessary words that would limit the search that are not relevant to the key terms? Searching "She is a doctor's course student" would eliminate cases with "He", for example.
- 2) Examine the type and location of the homepage the hits come from. Is it a reliable source for English grammar and vocabulary?
- 3) Ignore punctuation between words when evaluating grammar such as "The program is a three-year doctor's course. Students are required to take ..."
- 4) Evaluate the number of hits to make your decision. The answer is based on probability.
- 5) Estimate how common the phrase should be on the Internet. A search of the entire Internet for a common phrase without any or very few hits is unlikely to be correct. However, remember that native speakers also make spelling mistakes.

Skill 2.1.3 Use Advanced Google searches to identify words containing general grammar problems not specific to your field of research

TASK 2: Correct this type of sentence, commonly found in article introduction sections, by searching for other possible verbs. Do not include any words that are not necessary for the target grammar problem, which is the verb here. The answer is on page 9.

▪ **"Several researchers have been examined the role of"**

Remember to search only the key words that contain the grammar mistake. We want to see if the verb in the phrase "**have been examined the role of**" is correct. However, searching only "have examined" would make the search too wide.

- 1) On the main Google page select [Advanced search (고급검색)] on the right of the search box.
- 2) Type in words or phrases in [with the exact phrase (정확한 문구 포함)], and you will get the same results as a search with quotation marks.

3) Search only the domain name “.edu” if you want to search only American college websites, for example. Notice that you can also search pages containing domain names such as “.ac.kr” for Korean academic sites or “.ca” for Canadian webpages. You can also search a specific region of the world.

4) Search only “in the text of the page” as titles can have a different grammar.

The image shows the Google Advanced Search interface. At the top left is the Google logo. To its right is a blue bar with the text "Advanced Search". Below this is a search bar containing the text "allinbody: "researchers have examined the role of"". A red arrow points to this search bar. Below the search bar are several sections:

- Find web pages that have...**
 - all these words: [empty text box]
 - this exact wording or phrase: [researchers have examined the role of] (A red arrow points to this field.)
 - one or more of these words: [empty text box] OR [empty text box]
- But don't show pages that have...**
 - any of these unwanted words: [empty text box]
- Need more tools?**
 - Results per page: [20 results] (dropdown)
 - Language: [English] (dropdown) (A red arrow points to this field.)
 - File type: [any format] (dropdown)
 - Search within a site or domain: [empty text box] (A red arrow points to this field.)
(e.g. youtube.com, .edu)
- [-] Date, usage rights, numeric range, and more**
 - Date: (how recent the page is) [anytime] (dropdown)
 - Usage rights: [not filtered by license] (dropdown)
 - Where your keywords show up: [in the text of the page] (dropdown) (A red arrow points to this field.)
 - Region: [United States] (dropdown) (A red arrow points to this field.)
 - Numeric range: [empty text box] .. [empty text box]

A red callout box with a white background and a red border is positioned to the right of the "Search within a site or domain" field. It contains the text "type ".edu" (Optional)". A red arrow points from this callout box to the search within a site or domain field.

If you are only searching for a specific type of file, you can add the file format such as .pdf, .ppt etc. in [File format (파일 타입 검색)]. Documents in .pdf are more likely to be formal documents while .ppt searches might allow you to find presentation slides.

Skill 2.1.4 Determine if a text is being copied (plagiarism) from the Internet in English or other languages

You can use the same method to check if a text seems copied and pasted improperly from the Internet in English or Korean. Simply select a part of a sentence that you think is unlikely to have been written by a student and search the Internet. Then carefully compare the rest of the document with the rest of the student's paper to see if they have used the references properly. Note that this will not usually work with

many password protected sites or graduate students who are using password protected sites with PDF file journal articles.

TASK: Determine where this sentence came from.

"The service does not correct all grammar errors."

2.2 Internet Grammar Search: Advanced Google Scholar Search

Skill 2.2.1 Use mixed “keyword” and “exact phrase” searches in Google Scholar to search for more specific fixed expressions in your field

Google Scholar, <http://scholar.google.com/>, is a search engine that only searches academic sites. We can combine “keyword (문구)” and “exact phrase searches (정확한 문구)” to find example sentences specific to our subject area. Unfortunately, mixing keyword and exact phrase searches does not seem to be possible with the Adobe Reader Advanced Search function that will be introduced later.

As someone who works with technical English, I often encounter words that would be strange in “general English” such as “misbehaving nodes” in computer engineering or “permanently growing” cells in the life sciences. You can use the same strategy if you are unsure if a term is the correct expression in English in your field. To determine if “permanently growing” or any other usages in a particular field are common, follow these steps.

- 1) Open your web browser to <http://scholar.google.com/> or <http://scholar.google.co.kr/> (You can set the preferences to Korean but the English version has more features).
- 2) Click Advanced Search on the right side of the search box.
- 3) Input “with the **exact phrase**” any terms common in your field such as “permanently growing” combined with “**at least one** of the words” as a keyword such as “cell” and/or “lines”. You do not need to type the quotation marks in the search box for this type of search.
- 4) Select the “**Subject Areas**” for your field.

Find articles	with all of the words with the exact phrase with at least one of the words without the words where my words occur	<input type="text"/> <input type="text" value="permanently growing"/> <input type="text" value="cell lines"/> <input type="text"/> anywhere in the article ▾
Author	Return articles written by	<input type="text"/> e.g., "PJ Hayes" or McCarthy
Publication	Return articles published in	<input type="text"/> e.g., J Biol Chem or Nature
Date	Return articles published between	<input type="text"/> — <input type="text"/> e.g., 1996
Subject Areas	<input type="radio"/> Return articles in all subject areas. <input checked="" type="radio"/> Return only articles in the following subject areas: <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Biology, Life Sciences, and Environmental Science <input type="checkbox"/> Business, Administration, Finance, and Economics <input type="checkbox"/> Chemistry and Materials Science <input type="checkbox"/> Engineering, Computer Science, and Mathematics <input type="checkbox"/> Medicine, Pharmacology, and Veterinary Science <input type="checkbox"/> Physics, Astronomy, and Planetary Science <input type="checkbox"/> Social Sciences, Arts, and Humanities 	

We can see in the results that the term “permanently growing” is common in life sciences in the context of cell research. In addition, the source websites are reliable.

[Effect of haematopoietic cell growth factor on intracellular ATP ...](#)

Using WEHI-CM, we6 and others 7-9 have been able to obtain **permanently growing**, non-leukaemic **cell lines** of a granulocytic or mast **cell** nature. ...
adsabs.harvard.edu/abs/1983Natur.303..629W - [Similar pages](#)

[Immortalization of Human T Lymphocytes after Transfection of ...](#)

Two immortalized human T-lymphoblastoid **cell lines** have now been ... EBV genome with **permanently growing** hematopoietic cells of non B-**cell** lineage should ...
adsabs.harvard.edu/abs/1986Sci...233..980S - [Similar pages](#)

[Dana-Farber/Harvard Cancer Center: Cancer immunotherapy: Combining ...](#)

"Once the methods were perfected, we transferred the project to the **Cell** a **permanently growing** virus-infected B **cell** line, matched to the patient. ...
www.dfhcc.harvard.edu/news/news/article/877/334/ - 32k - [Cached](#) - [Similar pages](#)

[Wang Lab](#)

In tissue culture systems, EBV infects and immortalizes B cells into **permanently growing cell lines**. This has allowed the identification of i) the 12 latent ...
wanglab.bwh.harvard.edu/ - 9k - [Cached](#) - [Similar pages](#)

[The Robertson Lab](#)

An in vitro corollary of the oncogenic capacity of EBV is its ability to transform resting B cells into **permanently growing** lymphoblastoid **cell lines**. ...
microb205.med.upenn.edu/projects/Nm23.htm - 11k - [Cached](#) - [Similar pages](#)

TASK 3

What is the correct preposition to describe rats being fed in this sentence?

Group A and B were provided by distilled water.

The preposition “by” is usually followed by a person or an organization so it is not the structure we want. What other preposition would be possible here? We want the results only in the context of feeding rats in life sciences so we give the context keywords of either “water” or “rats” because sometimes the rats are described by their numbered control group. Different types of water are used such as tap water, distilled water, a certain amount of water, so we don’t want to limit our search by including “distilled” in the search.

Google scholar **Advanced Scholar Search**

Find articles with **all** of the words
with the **exact phrase**
with **at least one** of the words
without the words
where my words occur

rats water
were provided
anywhere in the article ▾

Author Return articles written by
e.g., "PJ Hayes" or McCarthy

Publication Return articles published in
e.g., J Biol Chem or Nature

Date Return articles published between
e.g., 1996

Subject Areas Return articles in all subject areas.
 Return only articles in the following subject areas:
 Biology, Life Sciences, and Environmental Science

The answer is on page 9

Skill 2.2.2 Identify common grammar patterns in your field

Google scholar also allows us to use “wildcard” searches using *, which allow us to search for any word within an exact phrase as in [“by * the”] + Noun, in engineering: *by averaging the, by selecting the, by neglecting the, by accepting the, by reviewing the, by searching the,* etc. Searching these patterns will allow authors to discover productive grammar structures in their field. Note that the wildcard function

does not seem to be available for the Adobe Reader Advanced Search Function we will be introduced to later.

Google Scholar BETA **Advanced Scholar Search**

Find articles with **all** of the words
with the **exact phrase**
with **at least one** of the words
without the words
where my words occur

Author Return articles written by
e.g., "PJ Hayes" or McCarthy

Publication Return articles published in
e.g., J Biol Chem or Nature

Date Return articles published between
e.g., 1996

Subject Areas

- Return articles in all subject areas.
- Return only articles in the following subject areas:
 - Biology, Life Sciences, and Environmental Science
 - Business, Administration, Finance, and Economics
 - Chemistry and Materials Science
 - Engineering, Computer Science, and Mathematics

TASK: select a structure and discover vocabulary use common in your field, or search ["by * the"] in other fields.

Also, in the Google Scholar "preferences", you can log in to your library system to improve your full-text access. You can also try *CrossRef*, which is a Google full-text search of journals from 29 leading publishers at http://www.nature.com/search/search_crossref.html.

Skill 2.2.3. Using Google Scholar with Hanyang Library

Google Scholar Search recognizes Hanyang library subscriptions. Search for keywords in your field and see if you can open up the FULL TEXT PDF of the journal article you searched. You can only do this if Hanyang has a subscription to the journal. This is more useful for undergraduate or master's students who want a more general search of a field, but with higher quality sources (including but not limited to journals) than a general Internet search. Searches with Google in the social sciences, where there are many local and domestic journals, and less specialized services than in the sciences, might also be productive. Science and medicine search engines tend to be more organized and scientists will probably not need this function.

Conclusion and limitations

Using search engines to check grammar is not a perfect system, but a powerful tool. If we search the key words of a sentence for grammar and we get no hits on the Internet, it is very unlikely to be correct. By changing our search words, we can often find the correct grammar of phrases. However, you must remember to check the source of the webpage information. If all the hits are only from Korean or Japanese websites, there is a good chance that the sentence is not standard English. Many published journal articles also contain grammar errors. You must also ignore punctuation between the search terms in the results. The system works on probability. If you cannot get a hit on what you search, it does not always mean it is wrong, but it is highly unlikely that it is right!

ANSWERS TO TASK 1

X: I am a Doctor's course student at Hanyang University.

O: I am a doctoral student at Hanyang University.

O: I am a doctoral candidate at Hanyang University.

O: I am a Ph.D. student at Hanyang University.

ANSWERS TO TASK 2

X: Several researchers have been examined the role of...

(Best choice to summarize previous research) O: researchers have examined the role of...

O: researchers examined the role of...

ANSWERS TO TASK 3

Group A and B/rats were provided with water.

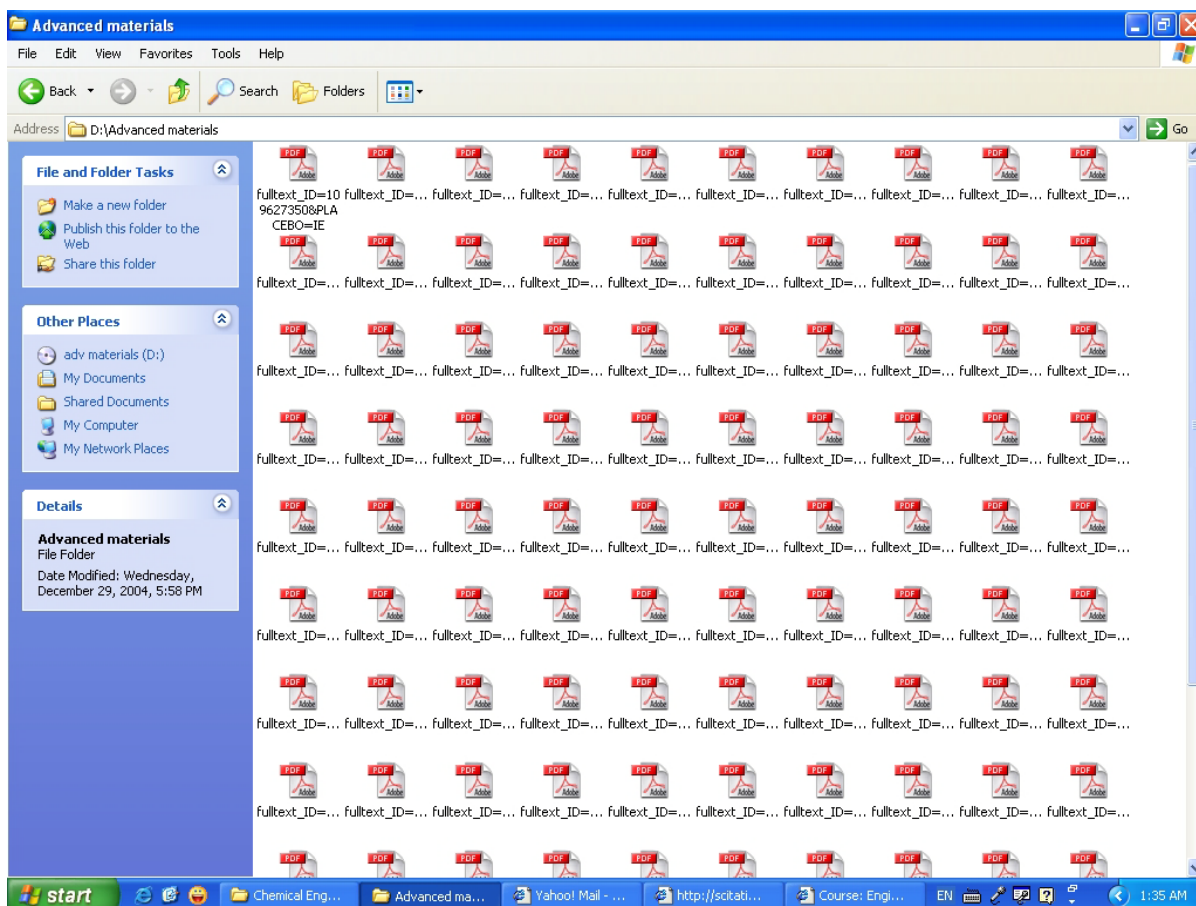
Group A and B/rats were provided with water ad libitum.

2.3: Adobe Acrobat Reader Advanced Search

The advanced search functions of Adobe Acrobat Reader allow you to turn a folder of PDF files from journals in your field into a searchable database of example sentence structures and correct expressions that are used in your specific area of research. Make sure that your Adobe Acrobat Reader is version 6.0 or above (Adobe Acrobat Reader 5.1 does not have an advanced search function).

Skill 2.3.1 Collect PDF files from journals in your field in one folder on a harddrive, USB, or CD

Download from online journals as many PDF file articles in your area of research as you can. I suggest at least 100 PDF files. Burn the files onto a CD or put them into a folder on your computer or USB. Don't fill a CD with files that contain a lot of color graphics because it might slow down the search speed. Note that graduate students and faculty are likely to have this number of PDF files from their own area of research already. Your folder should look something like this on a PC:



Skill 2.3.2 Search useful phrases or fixed expressions in your field

You may use the Adobe search technique to find useful expressions, phrases and sentence structures. One very useful sentence structure is “To + Verb” or “In order to + verb” at the beginning of a sentence. This


structure is often used to show the purpose of a research technique or method. Here is an engineering example:

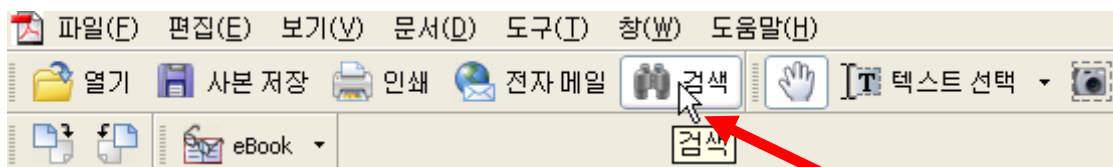
EXAMPLE

“To compute the average power consumption, we use the procedure described previously.”

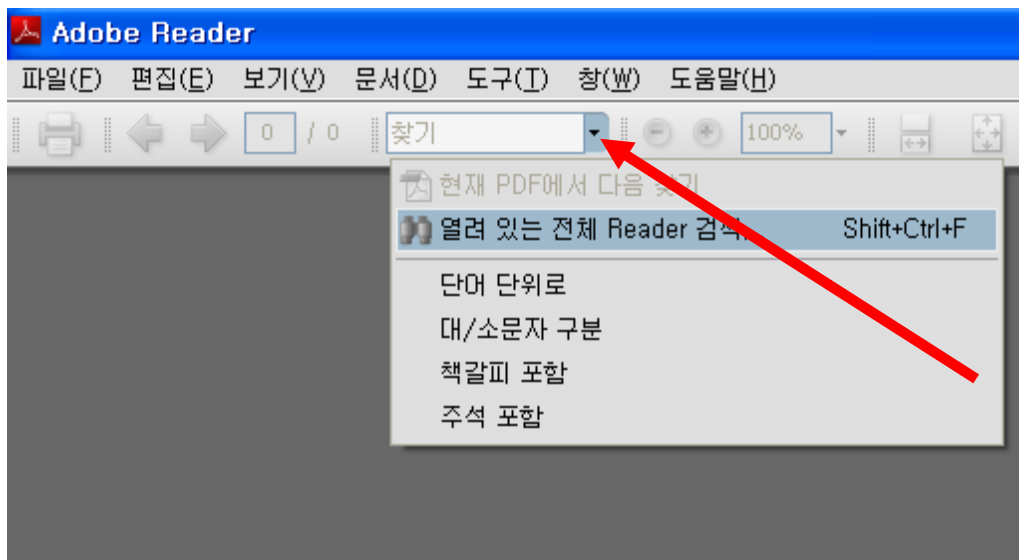
Source: IEEE Transactions on Multimedia, Vol. 5, No. 2, June 2003 ©IEEE

To use Adobe Reader Advanced Search functions follow these steps:

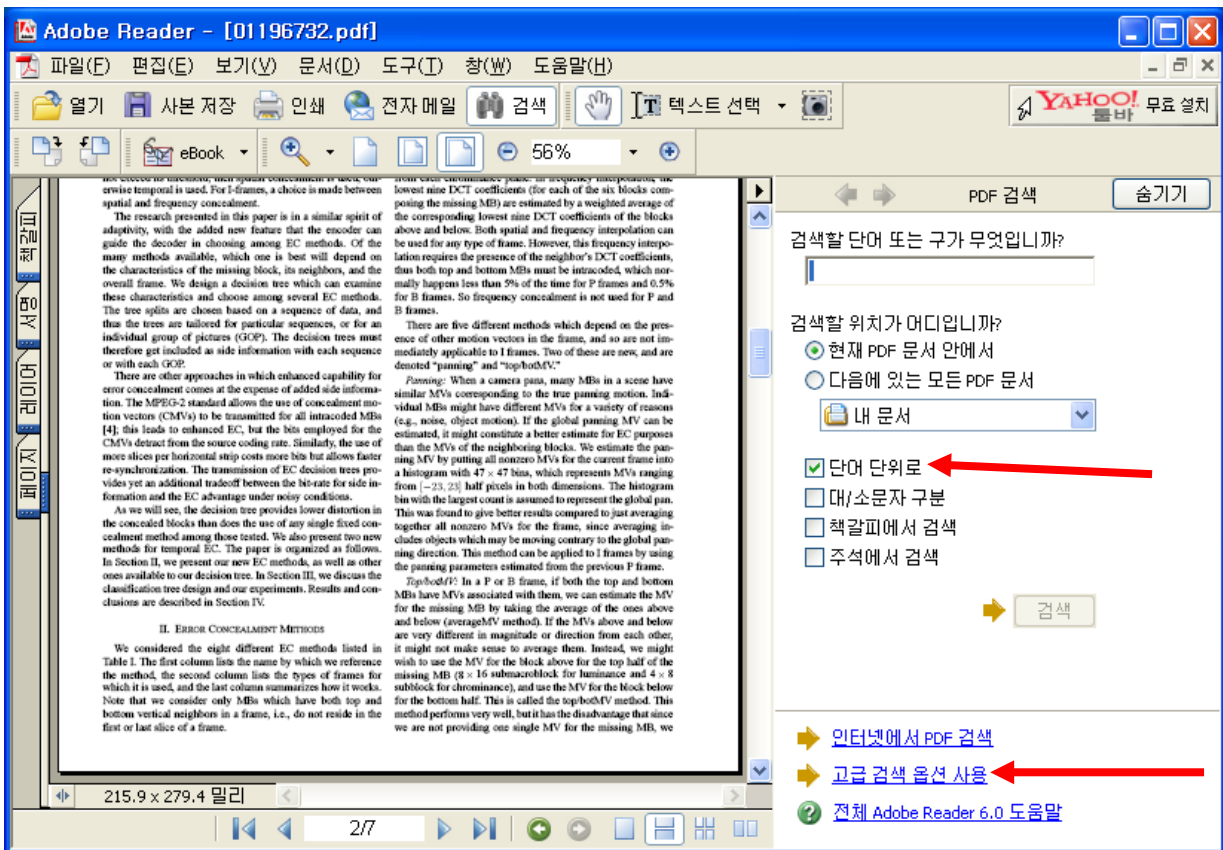
1) In Version 6 or 7, Click on [Edit (편집) → Search (검색)] or click on the  icon.



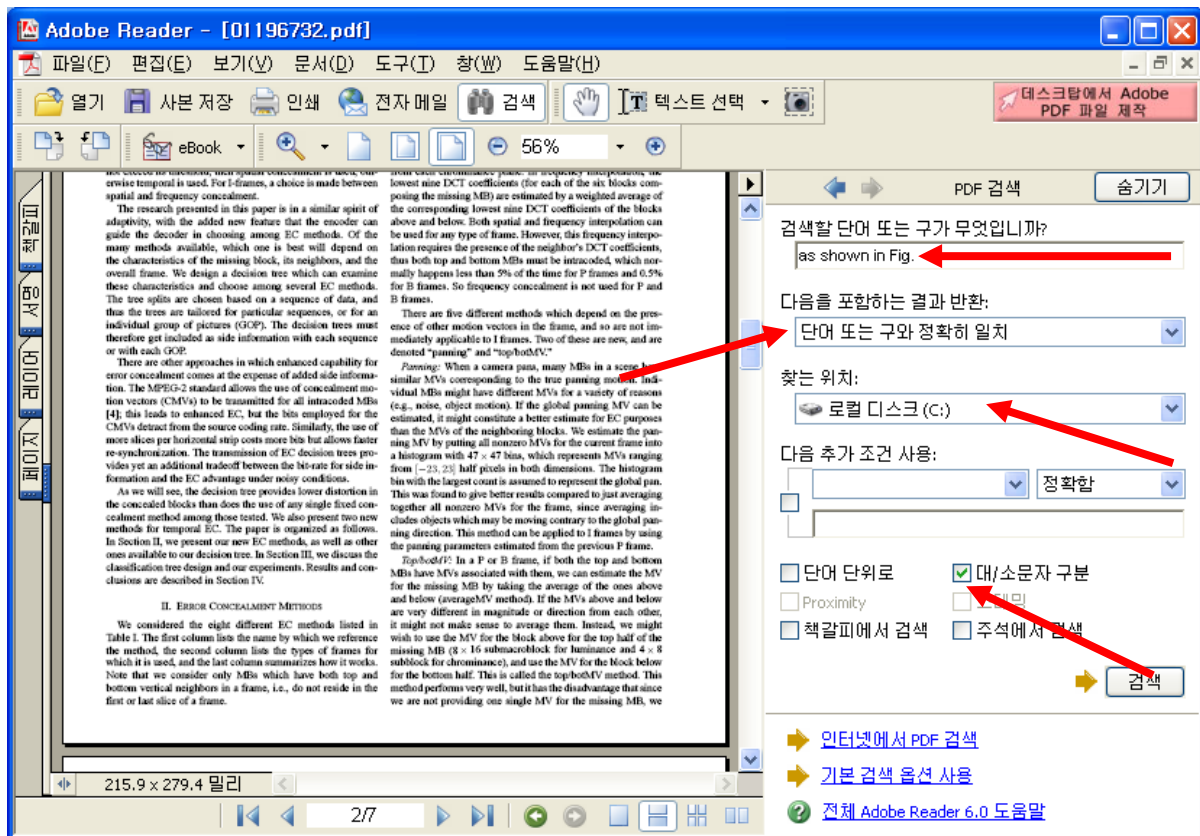
1a) In Version 8 or 9 you can pull down the search box and adjust your toolbar options.



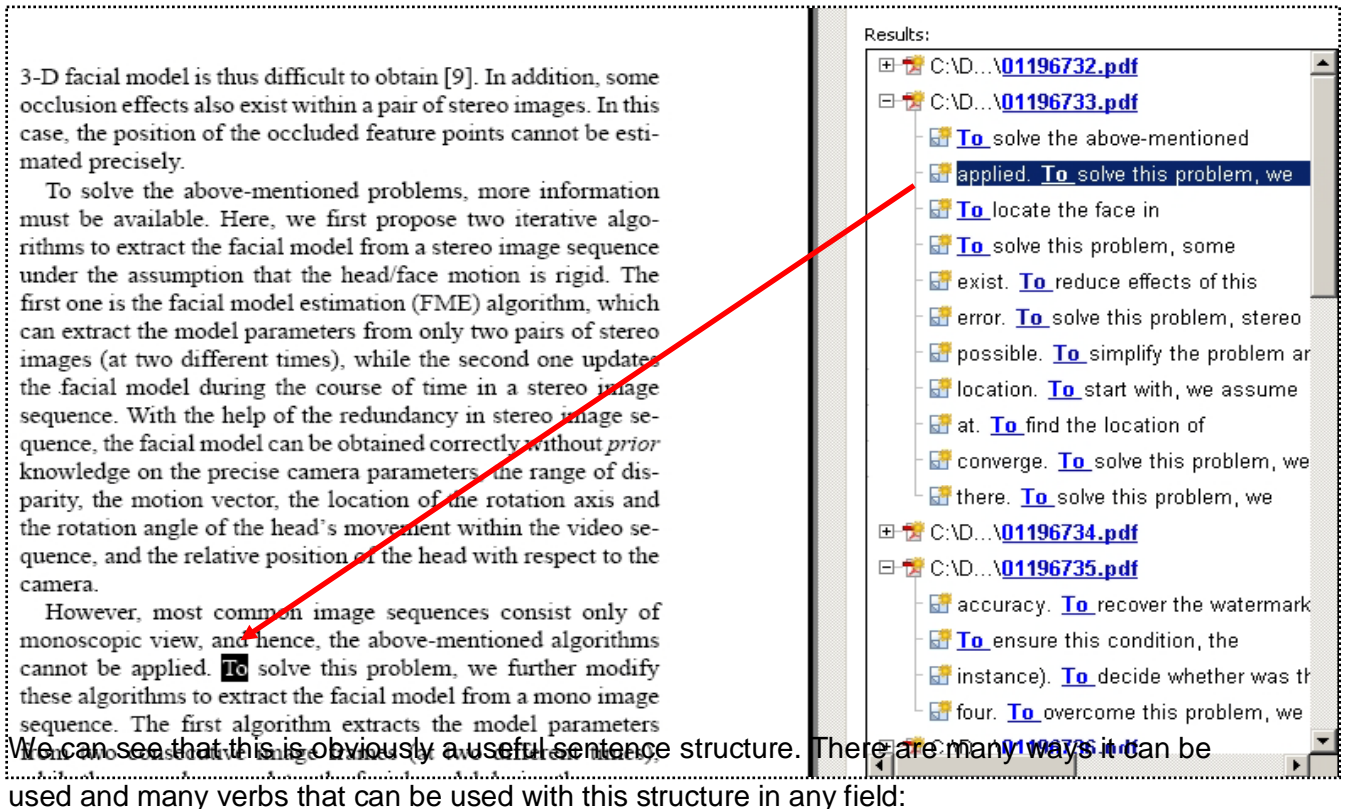
2) Click on [Advanced Search (고급 검색 옵션 사용)] on the bottom left [Ver. 6-7] or right [Ver. 8] depending on the version of Adobe you are using.



- 3) Make sure that you select the right folder or drive in the pull down menu and not the default, which is the “my documents folder.”
- 4) Type the words that you are searching for into the search box for example, “To”.
- 5) Choose [Match Exact word or phrase (단어 또는 구와 정확히 일치)] under [Return results containing (다음을 포함하는 결과 반환)].
- 6) Click on [Case-Sensitive (대/소문자 구분)] if you want different results for “To” or “to”.
- 7) Click on [Whole words only] if you want “To” and not “together, total,” etc.
- 8) Click [Search (검색)].



9) Click on a link shown in blue [Ver. 6-7] or bolded [Ver. 8] letters in the [Results (결과)].
 The exact location of the words is highlighted in the file that you searched for are shown on the left or right hand side in the PDF file according to the version you are using. The statistics of the results will also be shown, which will help you determine how common a word or expression is in your field (e.g. Documents found (찾은 문서); Total instances found (찾은 총 개수)).



EXAMPLE

To overcome this problem, we

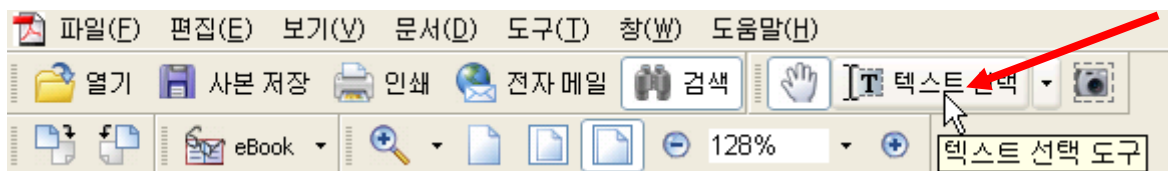
To solve this problem, we

To simplify the problem ...

In most PDF files you can also copy and paste example sentence structures for study directly from the PDF file. However, some journals may have security features so this is not always possible.

Skill 2.3.3 Collect useful phrases or fixed expressions for use in writing in your field

1) When you have located a useful sentence from the search results, click the text button in the menu, [text (텍스트 선택)]. In Version 8, text is automatically highlighted by the cursor.



2) Highlight the selected words, phrases or sentences that are useful to you by dragging the cursor over the words and copying them (Ctrl + C or right click).

3) Paste (Ctrl + V or right click) the copied text into an MS WORD document. Examine the sentence pattern and structure so that you can use the same structure in your own writing.

4) Collect useful phrases or sentences when you read PDF files for your future writing reference.

EXAMPLE

ORIGINAL: To verify the confidence of the performance improvement, we performed a simple hypothesis test based on the Neyman–Pearson criterion [19].

KANG *et al.*: Improving The Transcoding Capability Of Speech Coders IEEE Transactions On Multimedia, Vol. 5, No. 1, Mar 2003 Pg. 31

SENTENCE PATTERN: To verify X, we performed a Y test based on/using Z.

Plagiarism (copy and paste writing)

It is not acceptable, however, to simply copy and paste sentences from other papers, whether you are copying the words themselves or the ideas, without using quotation marks and a reference. The following links might be useful for students who are unsure how to use references.

Using references in the sciences from the English writing Lab

<http://www.hanyangowl.org/media/references/referencesinthesciences.pdf>

Other resources

<http://www.plagiarism.org/>

http://www.engineering.utoronto.ca/about/programs/communication/Online_Handbook/Accurate_Documentation/sources.htm

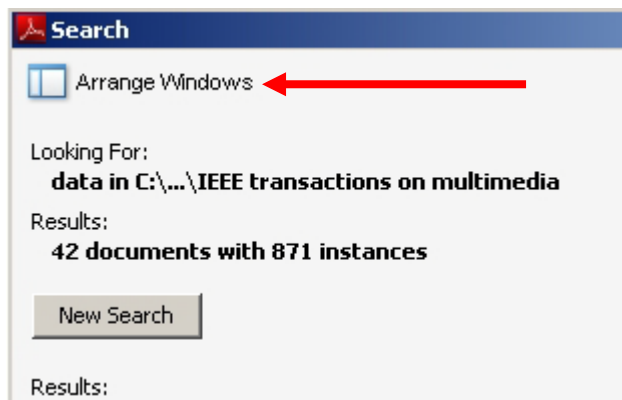
<http://www.nature.com/nature/journal/v435/n7040/full/435258a.html>

<http://writing.umn.edu/tww/plagiarism/>

Hanyang Library gives workshops on using Endnote, which is a reference management software system available as a free download in EZHUB. I highly recommend it.

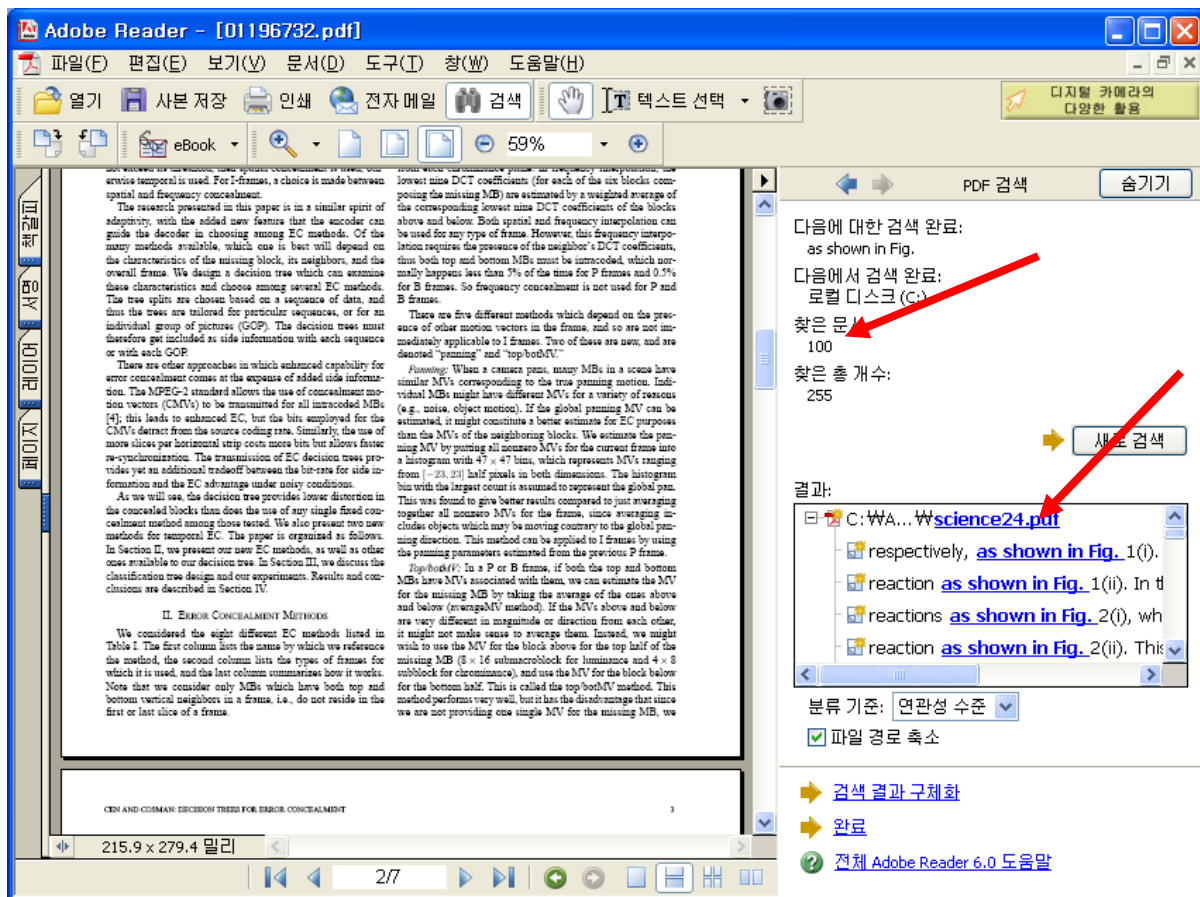
Skill 2.3.4 Use the advanced search functions of Adobe Acrobat Reader to correct grammar problems

We can use Adobe Acrobat Reader to find the exact format of words, even the right capitalization and punctuation by using the advanced search functions. Note that in Version 8 it is helpful to select the “arrange windows” button to organize the panels after searches.



TASK: As a general example common to many fields, determine the correct preposition in the following phrase "as shown ___ Fig."

- 1) Follow the same procedure for Adobe Advanced searches.
- 2) If you search for "as shown on Fig." or "as shown by Fig." you will see that you get no hits at all. Therefore, based on the search results, the correct preposition is usually **in** -> "as shown in Fig." If this search does not get any hits then a different expression for referring to figures must be common in your field.



Skill 2.3.5 Use the advanced search functions of Adobe Acrobat Reader to find out how words are used in your field

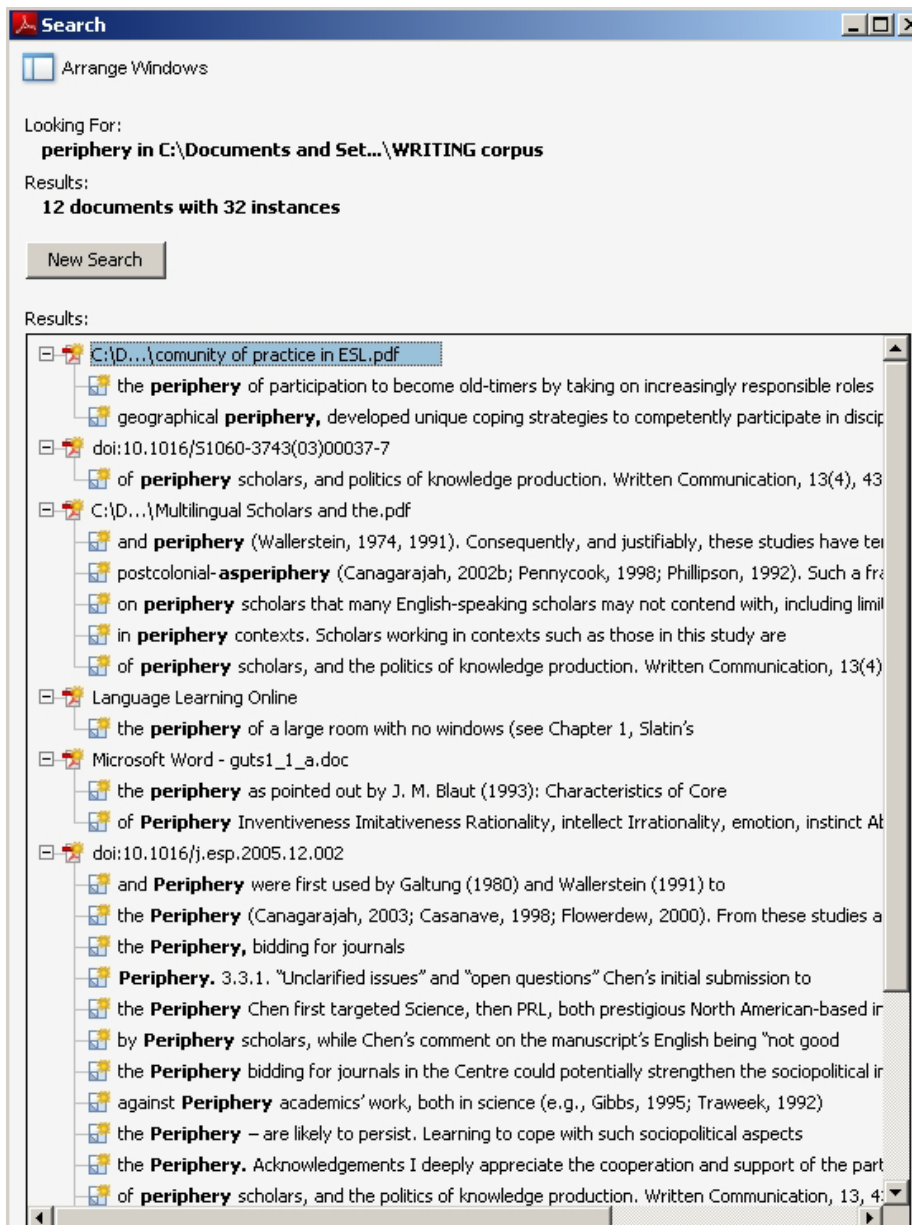
We can search words like “data” that can be difficult to use. Using adobe reader, you could do a search on the word “data.” How is it used? “This data, these data, a data, the data, data has, data have? You can see that there is confusion even in some published research papers. To find out which is most likely to be correct, see how many times a combination comes up and see if the paper is well written by a native speaker from a well-known university. This may help give you decide whether a grammar structure is correct or not.

TASK: Which of these are acceptable: “This data, these data, a data, the data, data has, data have?”

Skill 2.3.6 Improve literature reviews and introduction sections of papers by quickly getting an overview of text terms, concepts, materials, or theories in your field

When you are writing the introduction of a paper or the literature review of a thesis or dissertation, you need to search the literature of your field. However, the methods, materials, theories or names of authors are not always found in the titles of documents or easily searched. You can find the exact sentence (not only a

bibliography or a title search of a journal or citation index) citing an author, theory, material or method from every research paper PDF on your CD or USB using the adobe advanced search technique. It will not only search the text of the paper itself but also all of the references of all of the papers, which may help you to find papers that you missed in your original search. You can find not only the papers written by an author or about an author or technique but every sentence in the PDF file that refers to that technique or author—a great research tool. In the field of second language writing, the concepts of “center” and “periphery” scholars are often used these days to describe the problems of non-native speakers trying to publish in English. This search examines how this concept is used in articles in my corpus (collection) of PDF files.



Skill 2.3.7 Analyze and study which words go together in your field

A quick search of the term “method” in electronic engineering reveals these common pre- and post-modifying structures. In English linguistics these are called “collocations”, and they can be quickly collected for study and analysis using the Adobe Advanced Search method.

<i>New</i>	<i>method</i>	<i>using X</i>
<i>Proposed</i>		<i>available for X</i>
<i>Novel</i>		<i>which depends on X</i>
<i>Hybrid</i>		<i>based on X</i>
<i>Adaptive</i>		<i>dictated by X</i>
<i>Candidate</i>		

You can also determine which combinations of words go together in a particular field. For example, is “full set” or “entire set” more common in engineering to describe a group? To improve vocabulary, you can also check a thesaurus <http://www.m-w.com/> to find words that have a similar or opposite meaning. Then you can use an Adobe search exact phrase search to determine which combinations are common in your field and appropriate for academic writing. For example, instead of “big” what word combinations are acceptable in engineering: Big problem, enormous problem, huge problem, gigantic problem, terrible problem, major problem, massive problem?

Skill 2.3.8 Check to make sure that graduate students are using references properly

Unfortunately, a significant number of graduate students in Korea as primary authors are just copying and pasting sentences from other journal articles into especially the introduction sections of their own co-authored papers. Although almost all are including the reference, this is still unacceptable writing in the sciences. In the social sciences some entire sentences can be used as long as the sentence is in quotation marks with a reference. However, this is not common in the sciences and engineering.

TASK: To check that students or co-authors are using references properly ask them to include all the references they have used from journal articles in PDF format on a CD along with the original paper. By selecting sentences from the student’s paper in an Adobe search, you can check to see whether the student’s sentences are too close to the originals in their reference list from the journal article PDFs burned onto the CD or given to you by USB.

Other useful software and links for writing

Find more links on computer-assisted writing skills at
<http://hanyangowl.org/course/view.php?id=3>

Description of Endnote software (available from the EZHUB software download)
Click ICON on library mainpage: <http://library.hanyang.ac.kr/paiknam/index.jsp>

More resources on English research writing can be found at
<http://hanyangowl.org/>

Thesaurus to build vocabulary words to check using Adobe search/Google Scholar
<http://www.m-w.com>
<http://www.thefreedictionary.com/>

Dictionary with American audio pronunciation <http://www.learnersdictionary.com/>

Google Search of journal articles http://www.nature.com/search/search_crossref.html

Powerful tool that allows you to save text and parts of webpages in a powerful interface that syncs across computers.
<http://www.evernote.com/>

Customize your own flashcards (memocards) for learning English or technical vocabulary and concepts for your students.
<http://quizlet.com/>

Terms of use

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한글: <http://creativecommons.org/licenses/by-nc-sa/3.0/deed.ko>

Attribution must be given as follows: Adam Turner and the Hanyang CTL English Writing Lab
<http://www.hanyangowl.org>

Definition of non-commercial use

<http://ocw.mit.edu/OcwWeb/web/terms/terms/index.htm#noncomm>

Direct link: <http://www.hanyangowl.org/media/computerassisted/computerassistedwriting.pdf>
See <http://www.hanyangowl.org/> for more materials on writing for publication in English

Email corrections or suggestions to adamturner7@gmail.com



END