/vs/

PUBLISH OR PERISH!

ESSENTIAL ACADEMIC WRITING:

A HANDBOOK FOR THE EMPLOYEES OF INCAS

How to Write a Successful Research Paper and Proposal

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As today's scientific world is a "**Publish or perish**" one, good writing skills are needed to sustain or further an academic career. Developing strong communication skills, choosing the right word for the right topic and becoming familiar with certain phrases that are usual in scientific writing will increase your chances to succeed in the academic world.

The scientific message needs to be clear and easy to follow but also attractive without confusing or boring readers. Writing accurately but skillfully is an art that can be learned.

Here are some useful suggestions extracted from my practice of scientific papers translation and checking:

I.USE A CONCISE, CLEAR, ACCURATE AND WELL-STRUCTURED LANGUAGE.

The reader must receive your message *clearly and easily*. That's why you need to:

a).*Be concise* and do not write *too long* sentences that would confuse readers. Express only ***a single idea per sentence***. The recomended average length of sentences in scientific writing is only about **12-17 words with a maximum of 25 words** (according to Stephen M. Griffies, William A. Perrie and Gaëlle Hull „Elements of Style for Writing Scientific Journal Articles"- Elsevier, 2013).

Ex:

AVOID :"The Analysis of air flow, among the elements of the equipment located on the roof of the locomotive, was performed starting from the constructive form of the pantograph EP3, of the IAC- type circuit-breaker and of the high voltage insulators, respectively, which were redrawn at the 1:1 scale using the Autodesk Inventor model and arranged according to the 6 cases presented in Fig. 4 after which they were placed/inserted in a flow simulation program".(INCAS BULLETIN)

(A far **too long phrase** of **75 words** that distracts the reader's attention and makes him lose his interest in reading the paper)

REPLACE WITH: The paper analyzes the flow of the air between the elements of the equipment which are located on the roof of the locomotive. (23 words)

The experiment starts from the constructive form of the pantograph EP3, the IAC-type circuit-breaker and the high voltage insulators, respectively.(21 words) These were redrawn at the 1:1 scale using the Autodesk Inventor model.(12 words) They were arranged according to the 6 cases shown in Fig. 4 and were introduced afterwards in a flow simulation program.(21 words)

(To make the ideas clearer and easier to follow the text was divided into 4 shorter sentences disposed into two paragraphs).

b).*Avoid unnecessary words* .

Remember that less is more! Writing on clarity, the famous man of culture ***Thomas Jefferson*** said: "The most valuable of all talents is that of ***never using two words when one will do***".

Ex :

~~Already~~ existing	In ~~the~~ case ~~that~~
At ~~the~~ present ~~time~~	Mix ~~together~~
Alternative ~~choices~~	Now ~~at this time~~
~~Basic~~ fundamentals	Never ~~before~~
~~Completely~~ eliminate	None ~~at all~~
~~Continue to~~ remain	~~Separate~~ entities
Considered ~~to be~~ start ~~out~~	~~Still~~ persists
Currently ~~being~~ write ~~out~~	Equally ~~as~~ good ~~as~~
~~Currently~~ underway	Etc.
Had done ~~previously~~	
~~Empty~~ space	
~~In order~~ to determine	

c).Avoid wordy and repetitive style:

In the academic world, the ability to write concisely is far more valuable than the ability to fill pages with text.Remember that some words are always dispensable.

Ex:

To be replaced with:

Wordy text	Concise text
made the measurements	measured
conducted an analysis	analyzed
performed the development of	developed

as a matter of fact	in fact
at this point in time	now, at that time
during the time that, during the course of	while, during
despite the fact that	although
due to the fact that, as the result of	because
from the point of view, on behalf of	for
has been engaged in a study of	has studied
in the not-too-distant future	soon
it would appear that	apparently
regardless of the fact that	even though
take into consideration	consider
it is clear that	clearly
no later than	by
in the event that	if
employed the use of	used
in as few words as possible	concisely
due to the fact that	because
come together as a group	meet
recognize the fact that	acknowledge
by means of	with
firstly, secondly, thirdly,	first, second, third

on account of	because
so as to	to
point in time	at this time/ at this point
due to the fact that/in the view of the fact that	because

Wordy style:

Ex:

AVOID: "Firstly, I will present the basic fundamentals of the method in as few words as possible so as the readers to understand that in the not-too-distant future it will become very widely used taking into account its effectiveness and low cost despite the fact that it currently requires a relatively large implementation effort". (INCAS BULLETIN) (**53 words!**)

REPLACE WITH : First, I will concisely present the fundamentals of the method. (10 words) Considering its effectiveness and low cost, the method will become soon very widely used, although it currently requires a relatively large implementation effort.(23 words).

(The wordy phrase was divided into 2 meaningful units of **10** and **23 words,** respectively, which results in a style more concise and accurate.)

Repetitions:

Ex:

AVOID: "Numerical methods for solving equations describing the evolution of 3D fluid experienced a significant **development** that was and is closely related to **developments** in information systems".*(INCAS BULLETIN)*

*(Short example of repetitive, annoying style: the word **development** is repeated twice in the same sentence.)*

REPLACE WITH : Numerical methods for solving equations that describe the evolution of 3D fluid experienced a significant development closely related to the progress of the information systems.

Ex3:

AVOID *:* "A structured grid will have to have..".(INCAS BULLETIN)

REPLACE WITH*:* a structured grid should have...

Ex 4 *:*

AVOID*:* „In the border closer to the image, there is a crease which runs through the border about one inch".(INCAS BULLETIN)

REPLACE WITH: Closer to the image, a one-inch crease runs through the border*.*

d).Avoid fuzzy words *such as "approximately", "almost", "about", "large", etc. and* **be precise:**

Ex:

AVOID : "The concentration of the solution was tested regularly*".*

REPLACE WITH: We tested the concentration of the solution ever 45 minutes".

REMEMBER ! Using words that denote precision leads to increasing the reader's trust in your scientific paper.

Also avoid *" ambiguous words like "this", "these", "his", "it", "they"* as their meaning is clarified by the context and sometimes their significance is not obvious ***and it is rather difficult to identify the antecedent***:

Ex:

AVOID:"Because the receiver presented the radiometer with a high-flux environment, it was mounted in a silver-plated stainless steel container".

Does „it" refer to the the receiver or the radiometer?

Often fuzzy "this" or "these" **can be disambiguated by adding a noun** specifying **t**he type of object or concept to which you are referring. For instance, "this argument" or "this theory" is less confusing than simply "this".

e).Be clear:use well-structured paragraphs

Paragraphs should be more than just a collection of sentences.They should be well-structured and logically organized within the work.

- Focus on a single idea on each paragraph. Consider splitting a single long paragraph into two or three shorter ones.
- Respect the logical structure of each paragraph: (1) the **topic sentence**, (2) **supporting evidence**, and (3) the **concluding statement**.

- ✓ 1). *Key topic,* placed at the beginning of the paragraph, should clearly state the main idea to be developed. Do not make it too general otherwise the paragraph will be lengthy and unfocused.
- ✓ 2).*Supporting evidence* (generally,composed of two to five concise sentences) develops the main point of the paragraph.Use transition words and phrases to help the reader follow the argument from one sentence to the next.
- ✓ 3). *Concluding statement* clearly summarizes the conclusion and restates the main point of the paragraph. in the context of the supporting evidence. The concluding statement can also be used to transition into the main idea of the next paragraph.
- ✓ As a rule, the paragraphs should be kept longer than one sentence but shorter than one full page.

REMEMBER!: Using well-written paragraphs helps readers to understand easily the author's ideas and increases the reader's receptivity.Also, a well-structured paper will enhance the author's credibility as the writer turns out to be methodical and focused.

Ex:

a)."Creating and analyzing virtual prototypes is a discipline based on the extraordinary development of the computing abilities.[*1. Topic sentence*] A specialized tool for creating and analyzing complex mechanical systems (as for example an airplane) is ADAMS, multibody dynamic solutions, which can be used to model, simulate and visualize 3D mechanical systems in real functioning conditions, using iterative design technique. Many CAD specialized softs are compatible with ADAMS; therefore, the analysis performed in ADAMS can be transferred in other programs (ANSYS, NASTRAN, etc.)[*2. Supporting evidence*]. In this paper we perform a dynamic study of the IAR-99 using ADAMS for the whole aircraft, for the flight control system and for the landing gear". [*3. Concluding statement*]

b).Building a virtual prototype should consider some aspects we described in the following lines. [*1. Topic sentence*] The solution of the virtual prototype has to be *integrated* which means that working team must use a familiar CAD system for all the team members in order to have a simple transfer between the different design groups (mainly to the FEA groups). The solution has to be *adaptable*, in order to be able to use simple standard models. Also, the solution has to be *parametric.* This permits quick changes in the whole model and offers a good visualization of the project, so that the analyzing team is able to decide how to surpass the "sensible" points of the project. [*2. Supporting evidence*] These features are decisive for those who analyze the virtual prototype and who build the physical prototype as well ".[*3. Concluding statement*] (INCAS BULLETIN)

f).Use transition words to smooth the communication flow.

Use transition words to keep your ideas clear and link words,sentences and paragraphs.

You'll find listed below some **useful categories of transitional words**:

1.Reference (mentioning the idea):

Considering (this), regarding (this), with regards to (this), speaking about (this), as for (this), concerning (this), the fact that, on the subject of (this),must be remembered,another key point,etc.

2.Structuring (ordering the ideas**):**

First... second... third...,next,prior to,before, in the first place...also....lastly, first of all, in the first place, to begin with, to start with, for now, in the meantime, currently, in turn, generally, furthermore, the

next step, later on, next, then, simultaneosly, while,finally, just in the same way, as well as, basically, afterward, at first, during, earlier, eventually, etc

3.Addition/similarity (completing the previous ideas):

Additionally, along with, also, after all, especially,in addition, in fact,in like manner,identically, most importantly, indeed, obviously, to point out, with attention to, apart from, besides, equally important, for instance, further, however, likewise, moreover, not only....but also, similarly, therefore, thus together with, too, etc.

4.Details (developing the idea):

In detail, to explain, including, especially,etc.

5.Examples/emphasis/clarification (supporting and illustrating the ideas):

Such as, as, particularly, including, as an illustration, for example, like, in particular, for one thing, to illustrate, for instance, especially, notably, by way of example ,to point out, especially, as an example, namely, specifically, such as, thus,to demonstrate, chiefly, for instance, for example, in other words, that is, to clarify, to explain, to put it differently etc.

6.Comparision (showing similarities and differences):

Comparatively, correspondingly, in comparision, in like manner, in the same way, like, likewise, simirally, albeith, although, but, contrarily, despite, however, in any event in contrast, in spite of, instead, in theory...in practice, nevertheless, on the contrary,on one hand....on the other hand, otherwise,rather, regardless of, unlike, whereas, while this may be true, yet,different from,etc.

7.Concession (admitting oppsing views):

Although, at any rate, at least, despite, even so, even though, however,in any case, in spite of, nevertheless, while it may be true, yet,etc.

8.Conclusion (summarizing):

As a final point,as can be seen,In the final analysis, eventually, as shown above,at last, to conclude (with), in the end, lastly, last but not least, finally, in summary, as was previously stated, all in all, consequently, to sum up, overall, to summarize, briefly, thus, as has been mentioned, to be brief, given these points, therefore, in conclusion,on the whole, in all, hence,to put it briefly, in a word,in short, all things considered, to put it differently, etc.

9.Consequence (showing results):

As a consequence, due to this, for this reason, hence, in that case, therefore, under those circumstances, with the result that, accordingly, thus, then, as a result, etc.

10.Generalization (giving a general perspective):

as a rule,as usual, generally, in general, on the whole, overall, usually, etc.

11.Exception (excluding from usual situations):

aside from, except for, part from, besides, barring, but, except that, excluding, other than, unless, etc.

12.Cause/purpose (proposing ideas for consideration):

for the purpose of, for this purpose, therefore, in order to, to the end that, to this end, with this in mind, with this intention, as a result, thus, hence, because of, etc.

✓ ***Punctuation of transition words:***

If transitional words begin a sentence, they are followed by a comma.

When they are used to join independent clauses they are preceded by a semicolon and followed by a comma.

Ex*:* "More precisely**,** between 0 and 100 seconds, the evolutions of Φ1, Φ2 and Φ3 will be as shown in Figure 1**;** in fact, the evolutions were obtained by an uniform acceleration of the angular variables from 0 to 50 sec, followed by an uniform deceleration from 50 to 100 sec". (INCAS BULLETIN).

g).Avoid colloquial phrases, abbreviations, contractions, repetitions and run-on sentences

- **colloquial language** (use of informal words, phrases, or even slang.)

  Ex:

AVOID "*gonna*" for "*going to*" , „**for sure**" insted of "*with certainty*" , "*kind of/sort of*" for "*type of*", "*big*" instead of "*large,great*", "*lots or lots of*" for "*many*"or "*much*",etc.

Ex1*:*

AVOID "There are lots of reasons for justifying this experiment". (INCAS BULLETIN)

REPLACE WITH: There are several reasons for justifying the experiment.

Ex 2*:*

*AVOID: "*The author aimed to explore every avenue.But easier said than done".(INCAS BULLETIN)

REPLACE WITH : The author aimed to investigate all alternatives but this proved more difficult to put into practice.

- **abbreviations** except for very well-known ones.If you must abbreviate, define the term in its first occurrence and put abbreviations in parentheses.

Ex:

"Other successful methodologies that interface well with Product Lifecycle Management (PLM) include open innovation and virtual product development (VPD)".

- contractions such as "it's", "isn't", or "weren't" , "musn't" ,"can't," "don't," "won't," etc should be repalced with the long forms : "it is", "is not", "were not", "cannot", "do not", "will not" , etc.

Ex:

AVOID: "The method solves an important matter that shouldn't focus only on the man-machine connection".(INCAS BULLETIN)

REPLACE WITH: The method solves an important matter that should not only focus on the man-machine connection.

- **run-on sentences/phrases** (two/more independent sentences joined together without being properly connected by conjunctions such as :"*and*", "*but*", "*for*", "*nor*", "*yet*", "*or*", "*so*"). Run-on sentences contain too many ideas and not enough punctuation.

WAYS TO CORRECT RUN-ON SENTENCES:

- ➢ *1).Split a run-on sentence into meaningful shorter units.*
- ➢ *2).Place a comma and a coordinating word ("and", "but", "for", "nor", "yet", "or", "so") between the sentences.*
- ➢ *3).Connect the first sentence with a subordinating word such as : "after", "although", "because", "since", "when" and place a comma between the two units.*
- ➢ *4).Reduce the two spliced sentences to one cohesive sentence.*

As a general rule, it is better to divide the phrase into short sentences that have their own meaning than to write long, wordy phrases whose meaning is lost to the end.

Ex1:

AVOID: "The Analysis of air flow, among the elements of the equipment located on the roof of the locomotive, was performed starting from the constructive form of the pantograph EP3, of the IAC- type circuit-breaker and of the high voltage insulators, respectively, which were redrawn at the 1:1 scale using the Autodesk Inventor model and arranged according to the 6 cases presented in Fig. 4, after which they were placed/inserted in a flow simulation program" (INCAS BULLETIN); *(1 single wordy phrase with 5 meaningful units,7 lines, 74 words)*

REPLACE WITH: The paper analyzes the air flow among the elements of the equipment that are located on the roof of the locomotive.(1)

The experiment starts from the constructive form of the pantograph EP3, the IAC- type circuit-breaker and the high voltage insulators, respectively.(2)These were redrawn at the 1:1 scale using the Autodesk Inventor model.(3)They were arranged according to the 6 cases shown in Fig. 4.(4) and after that, were introduced into a flow simulation program".(5)

The phrase was divided into 5 meaningful units disposed into 2 paragraphs to facilitate comprehension.The last two senteces were linked and reduced to one cohesive phrase.The message became clear and easy to follow.

Ex2:

AVOID: *"The opposite is true for stronger types of stainless steel they tend to be more susceptible to rust". (INCAS BULLETIN)*

REPLACE WITH :The opposite is true for stronger types of stainless steel because they tend to be more susceptible to rust.

(The communication flow is restablished by using a subordinating word.)

Ex3:

AVOID: "This report presents the data we found concerning the cost of the water treatment project, then it presents comparative data from other similar projects".(INCAS BULLETIN)

*REPLACE WITH:*This report first presents the data we found concerning the cost of the water treatment project and then it discusses comparative data from other similar projects.(Remember to connect the sentence properly!)

h).Avoid starting a sentence with coordinating conjunction ("and", "so", "but", "or")

Instead use compound sentences or transitional adverbs, such as "additionally","therefore","alternatively","consequently"and "nevertheless".

Ex:

AVOID: "So taking into consideration that the noise magnitude is proportional to the air flow velocity, for now we cannot tell which of the shapes is more efficient in noise reduction".*(INCAS BULLETIN)*

REPLACE WITH: Consequently, taking into consideration that the noise magnitude is proportional to the air flow velocity, for now we cannot tell which shape is more efficient in noise reduction.

Ex2*:*

AVOID: And, the study also compared…

REPLACE WITH: The study also compared

Remember! Do not use a comma before and after „and"!

i).Avoid plagiarism!

Taking a leaf from the previous authors' papers is not a mistake but be sure to quote the source correctly. In fact, plagiarism is a form of intellectual property theft and cannot be accepted in the academic setting. To avoid plagiarism there are two simple methods:

a).Use a direct quote
When you use a direct quote, you must
> 1).reproduce the author's words textually, word for word.
> 2).put the original text in quotation marks.

Directly quoting means including in your text a **brief citation(**namely parenthetical references containing the name of cited source and data) at the place where you refer to the source and a **full citation** in your reference list or bibliography at the end of the paper.
The examples below were taken from**:** American Psychological Association APA Citation Style, 2009, 6th Edition.

Ex1: Gibaldi (2003) indicates that "Quotations are effective in research papers when used selectively" (p. 109).
Ex2: Remember that "quotations are effective in research papers when used selectively" (Gibaldi, 2003, p. 109).

Ex3: In 2003, Gibaldi wrote that, "Quotations are effective in research papers when used selectively" (p. 109).

Below, there is the full citation to be added in the reference page This page must meet the document formatting guidelines required by your educational institution/ the journal in which you want to publish:

Ex:Joseph Gibaldi, Modern Language Association of America (MLA) Handbook for Writers of Research Papers,6 Edition, University of Chicago Press, 2003.

According to the Manuscript Templates for Conference Proceedings of IEEE (Institute of Electrical and Electronics Engineers), the world's largest technical professional society, "In American English commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)"

b).Use a paraphrase/ a summary

Paraphrasing means putting the author's ideas in your own words. Do not simply replace the author's original words with synonyms. You also need to modify the syntax of the sentences and the words order. When you are finished, remember to cite the author.

Ex: A paraphrase of Gibaldi's earlier quotation might be written as follows: *Within the research paper, quotations will have more impact when used judiciously* (Gibaldi, 2003, p. 109).

Summarising involves repeating the **main ideas** of a text in your own words including only the main point(s).

Paraphrasing and quoting can be used if you want to focus <u>on only one aspect</u> of a research article/book. *Summarizin*g is a helpful tool if you consider the <u>entire source</u> relevant for your own work.

The source must be cited even if you put information in your own words by summarizing or paraphrasing.

You must also cite the source for diagrams, illustrations, or other images that you did not create yourself.

Do not forget that citing is a matter of honesty and trustworthiness. Besides, a citation brings a credible support to your work and enables the reader to deepen the subject.

REMEMBER! There are plagiarism programs and any serious publisher uses these programs to denounce plagiarists and disqualify their works!

II. *USE PROPER GRAMMAR:*

A. *USE COMPLETE SENTENCES*

Remember that sentences must be complete, i.e., they must contain a subject and a predicate, so that they express an entire idea not just a fragment or the beginning of a thought.

Note that most "-ing" words do not form predicates.

Ex:

"The evolution of a field of activity <u>depending</u> on companies <u>acting</u> in the field and the laws involved".(INCAS BULLETIN)

Without predicate those words are just a fragment of an idea.To be a sentence it would have to be :

The evolution of a field of activity depends on the companies operating in this domain and the laws involved.

B.USE PARALLEL STRUCTURE :

Parallel Structure *means using the same grammatical form for words that have the same level of importance in a sentence or for a list of items joined by a coordinating conjunction, such as "and" or "or". By making each compared item or idea in your sentence follow the same grammatical pattern, you create a parallel construction.*

Ex:

AVOID: "Awareness of context or a risk, system knowledge, improving certain processes, imposing control and thorough preparation will limit oscillations". (INCAS BULLETIN)

(''*Awareness", "knowledge", "improving", "imposing", "preparation"* are different parts of speech - nouns mixed with verbs - and cannot form the multiple subject in an enumeration. They are not a parallel structure.*)*

WRITE: The context or risk awareness, a good knowledge of the system, improvement of certain processes, establishment of a strict control and a thorough preparation will limit oscillations.

Here, *awareness, knowledge, improvement, establishment, preparation* are all nouns forming a correct parallel structure.

REMEMBER! Different speech parts cannot compose a multiple grammatical subject.

Ex2 *:*

AVOID: "Actual methods are structured in calculating the frequency of occurrence of the risk, barriers efficiency and, in the second part, on the accident severity". (INCAS BULLETIN)

WRITE: Current methods are structured to calculate the risk frequency and the barriers efficiency and also to assess the accidents severity.

In the last phrase the adverbials of purpose form a parallel structure of verbs ("to calculate", "to asses") while in the first they are different parts of speech ("calculating" and "severity", verb and noun, respectively.)

C. USE VERBS INSTEAD OF NOUNS

Texts containing very many nouns are difficult to read. The communication dynamic is restored if we replace the nouns with the corresponding verbs, for instance: "*analysis*" with "*analyze*", "*examining*" with "*examine*", "*comparison*" with "*compare*", "*improvement*" with "*improve*", etc.Also, using verbs instead of nouns is a great technique to make shorter phrases.

Ex1:

AVOID : "For this analysis, in the framework of article, are presented results obtained by experiments following a geometric modelling at scale 1: 12". (INCAS BULLETIN*)*

*REPLACE WITH***:** The article analyzes experimental results obtained by geometric modelling at scale 1:12.

Ex2 :

*AVOID***:** "The purpose is replacement of the valve and laminar regulators with a helicoidal turbine that uses adiabatic expansion for production of useful and clean energy". (INCAS BULLETIN)

*REPLACE WITH***:** The purpose is to replace the valve and laminar regulators with a helicoidal turbine that uses adiabatic expansion to produce useful and clean energy.

REMEMBER! Using verbs instead of nouns increases the dynamics and fluidity of the communication flow.

D).USE THE RIGHT TENSE AND DO NOT MIX TENSES OR VOICES IN THE SAME SENTENCE

1. When a sentence contains two or more verbs, both verbs should maintain the same voice (active or passive).

_Ex1_:

AVOID: When the operator <u>turned on</u> the device a buzzing sound <u>was heard</u>. (Error – shift without reason from active voice to passive voice)

REPLACE WITH : When the operator <u>turned on</u> the device he <u>heard</u> a buzzing sound.

REMEMBER! However, emphasis on subject requires shift in voice. (The subject must be the same for both sentences!);

_Ex2:_

The appliance <u>broke down</u> after 3 hours of operation but <u>was repaired</u> immediately.

Here, the use of passive allows the sentence to focus on the subject which is the same,(i.e. the appliance).

2. Except for special cases where the intended meaning requires a change in tense, <u>maintain the same tense within a sentence</u>

_Ex:_

AVOID The device starts when the command is given and then recorded the measurements accurately.

The first verb is used in present tense;the second verb is in past tense.

REPLACE WITH: The device starts when the command is given and then records the measurements accurately.

Both verbs are in present tense.

According to Frederic Bushman *(Improving your scientific writing:a short guide),* the writer must keep the verb tense consistent within sections of his paper. For instance, methods, results and preliminary studies must usually be writen in the past tense, because the experiments have already been done. Discussion sections should be expressed both in the present and past tenses with results interpretation and conclusions in the present tense.

E. USE ACTIVE AND PASSIVE VOICE CORRECTLY

To make your ideas clear use the active voice which distinctly identifies the subject and the action taken by the subject.Use passive voice only for emphasis or when you do not have enough information. The passive voice indicates that the subject receives, rather than performs, the action.

As a general rule,limit, but not completely avoid passive voice in your writing.

> *Ex:*

> *AVOID :* "In the paper are presented the rules for information for employees in the aerospace field about general procedures, accounting, budgets, involvement in the objectives of the companies as a team or group".(INCAS BULLETIN)

> *REPLACE WITH***:** The paper outlines rules about general procedures, accounting, budgets and involvement in the companies goals as a team or a group for the employees in the aerospace field.

> *AVOID:* "In this study a motion of aircraft suffering from an engine failure is simulated".(INCAS BULLETIN)

REPLACE WITH: This paper presents the flight simulation of an aircraft with a defective engine*.*

F. AVOID MISPLACED LIMITING MODIFIERS

Limiting modifiers are words that restrict or limit the meaning of the word or group of words they modify. The meaning of a sentence can change dramatically depending on where these modifiers are placed.

Place limiting modifiers such as:"almost", "even", "exactly", "hardly", "just", "merely", "nearly", "only", "scarcely", and "simply" in front of the word or words you wish to modify.

REMEMBER! If limiting modifiers are misplaced they create confusion.

Ex:

The pump <u>only</u> pushed the liquid 20 meters apart.

The pump pushed the liquid at a distance of <u>only</u> 20 meters.

The meaning of the two sentences is different as the words modified by "only" are different ("pushed" and "20 meters", respectively!)

G. USE NOUNS WITH PARTICULARITIES CORRECTLY:

USUAL NOUNS WITH PARTICULARITIES FOR SINGULAR AND PLURAL

SINGULAR	*PLURAL*
AIRCRAFT	*AIRCRAFT*
ANALYSIS	*ANALYSES*
AXIS	*AXES*
BASIS	*BASES*
CRITERION	*CRITERIA*
CURRICULUM	*CURRICULA*
DATUM	*DATA*
FORMULA	*FORMULAE/FORMULAS*
GENUS	*GENERA*
HYPOTHESIS	*HYPOTHESES*
INDEX	*INDICES*
MATRIX	*MATRICES*
MAXIMUM	*MAXIMA*
MEDIUM	*MEDIA*
MINIMUM	*MINIMA*
NUCLEUS	*NUCLEI*
OPTIMUM	*OPTIMA*
PARANTHESIS	*PARANTHESES*
SCHEMA	*SCHEMATA*
SERIES	*SERIES*
SPECIES	*SPECIES*
SPECTRUM	*SPECTRA*
STIMULUS	*STIMULI*

Ex.

Write: This <u>datum is</u> confusing; further <u>data are</u> needed to claify the matter*.*

H. *DO NOT INVENT NOUNS BY ADDING ENDINGS TO ESTABLISHED WORDS! LOOK UP WORDS IN THE DICTIONARY!*

Ex:

Do not write:
- analyzation for analysis
- structuralization for structure
- summarization for summary,etc
.

Remember! Enrich your vocabulary so you do not have to repeat the same words .Knowing new verbs, using the correct synonyms brings color to your paper and arouses the reader's interest. Use a thesaurus!

Here are some useful links :

1).The Academic Word List - Oxford Advanced Learner's Dictionary (*https://www.oxfordlearnersdictionaries.com/wordlist/*)

2). https://www.vocabulary.com/
You'll find here: The Top 60 Most Common Academic Words - Vocabulary List.

3). https://www.thesaurus.com

4). https://www.dictionary.com

5). https://www.collinsdictionary.com

6). https://www.wordsmyth.net

7). http://www.phrasebank.manchester.ac.uk/

To identify whether a certain word is commonly used in academic writing, search for this word in COCA Word and Phrase:
 (https://www.wordandphrase.info/frequencyList.asp).Click on the word for context and synonyms, and a box below will show you a graph that displays the word frequency in different contexts (e.g. in spoken language, magazines, fiction, and academic writing). If the graph shows that this word is not frequent in academic writing, you should look for synonyms (also provided on this website).

I. USE "THAT" (DEFINES AND RESTRICTS) AND "WHICH" (GENERALLY UNRESTRICTIVE) CORRECTLY.

It is essential to distinguish between a clause that changes the meaning of the main sentence(restrictive clause) and a clause that just adds information to it (unrestrictive clause). Use **"that"** for restrictive clauses,for what is **essential**

If omitting the clause changes the meaning of the sentence, you need to use "that" in your sentence.

If omitting the clause only removes additional information from the sentence, you need to use "which" in your sentence and you should surround the clause by commas. **"Which" is for non-essential**.

Here is an exemple of unrestrictive clause made with which:
*The parts of the device, **which are expensive**, have been manufactured in the UK.*

*(**Meaning**: The phrase would make sense without "which is expensive".).*

Here is an exemple of <u>restrictive clause</u> made with <u>that</u>
*The parts **that were** defective have been replaced.*

(Meaning**:** Only the defective parts have been replaced; omitting the restrictive clause „that were defective" means that all parts have been replaced)

Ex2: *The Company honored the orders **that** were less than 60 days old.*
(Meaning: the company honored only those orders less than 90 days old, but not those over 90 days old.)

The same <u>nonrestrictive clause</u> made with <u>which</u> has a different meaning:
*The Company honored the orders**, which** were less than 90 days old*.
(**Meaning**: the company honored all the orders, all of which were less than 90 days old)

J. ADJECTIVES ORDER

The <u>correct order</u> of the adjectives are as follows:

Value/Opinion, Size, Age/Temperature, Shape, Colour, Origin, Material:

VALUE/OPINION	expensive,important,main,
SIZE	small,huge, tiny
AGE/TEMPERATURE	old,hot,cold
SHAPE	round,square,rectangular
COLOUR	red,blak,white
ORIGIN	Chinese,Swedish,Romanian
MATERIAL	plastic,wooden,composite

Ex:

 A small rectangular wooden panel was utilized.

K.ARTICLES IN ACADEMIC WRITING

Section K, dealing with articles and this fairly non-traditional classification comes entirely from Caplan, N. (2015). *Grammar Choices for Graduate and Professional Writers.* Michigan: University of Michigan Press

"Articles determine or specify whether a noun is general or specific in its references.

The questions we ask to determine if the noun is general or specific are: is it all things (*generic reference*), one of many things *(indefinite reference*), or this one thing (*definite reference)*? Below is the detailed explanation of the three types of references.

1. Generic Reference
Nouns that describe a class, not an individual person or thing, have generic reference; the meaning of the noun is **all of it/them**. Generic reference can often be seen in general statements used to introduce, define, or summarize ideas.

Explanation	Example
Non-Count Nouns Use no article for generic reference.	The development of a testable hypothesis is a key characteristic of good **science**.

Count Nouns	
1. Use <u>a plural noun</u> (with no article). This is the most common use for generic reference.	1. The process can be intensely demoralizing both for **students** and **teachers.**
2. Use <u>a/an + singular noun</u>, especially in definitions.	2. **A portfolio** is a file containing samples of a child's work.
3. Use <u>the + singular noun</u> as an alternative with humans, animals, organs of the body, plants, and complex inventions. It is used only in formal contexts.	3. The basic structure of **the brain** is affected by the sum of **the adolescent's** experiences with his or her environment.

2. Indefinite Reference

Indefinite reference is appropriate when the reader and/or the writer do not both know the specific identity of the noun. This might be because:

- it is not important (*use a computer* = use any computer)
- not known to the writer (*a further study is needed*)
- new to the reader (*we used a new technique* = the writer knows exactly which technique, but the reader does not).

The basic meaning of a noun with indefinite reference is **one/some of many**.

Explanation	Example
Singular Count Nouns **Use <u>a/an</u>** for all singular count nouns with indefinite reference. Remember to use **<u>an</u>** when the next word starts with a vowel sound.	Prior to the 1940s, the teaching of ESL was not regarded as **a profession** in the United States. [*A profession* here means "any profession" so the noun is indefinite].
Non-Count Nouns and Plural Nouns	The presence of **ESL students** should be an important consideration for all teachers and scholars of writing because **ESL**

<u>No article</u> is used when the non-count noun or plural noun is with an indefinite reference**.**	**students** can be found in **many writing courses** across the United States.
Special Uses 1. Expression of quantity 2. The meaning of per	 1. **a number** of, **a piece** of, **a section** of 2. 60 miles **an hour**, $200 **an hour**

It is important to mention that there is really difficult to identify the difference with generic reference and indefinite reference with plural and non-count nouns; however, it is not necessary since they have the same grammatical rules.

3. Definite Reference

A definite reference is used when the reader and writer both know or can easily find the exact meaning of the noun. Academic writers use definite reference extensively to connect ideas within and between sentences and to establish sheared knowledge with readers. All common nouns (count and non-count, singular and plural) <u>use *the* for definite reference.</u> A noun is definite if:

Explanation	Example
It has been previously identified in the text.	Payne et al. conducted their first cross foster experiment in 1998: Payne and his colleagues performed **the experiment** with Vidua chalybeata, the village indigobird. [*The experiment* is definite because it was introduced in the first sentence].
It is unique (if there is only one of something, it is fully identified for the reader).	Constant littering has a large negative impact on **the environment.**
The noun phrase includes a superlative adjective, which is necessarily unique	**The biggest problem** with conducting the study was a lack of a control group.

(the first, the second, the next, the only, etc.).	
The noun is identifiable due to a modifier or quantifier.	**the U.S. government, the problem** of college**, the people** who supported the association
The noun is part of a whole group.	The agricultural sector accounts for about one-fourth of **the country's Gross Domestic Produc**t, two-fifths of **the country's exports**, and half of **the labor force**.
Some proper nouns require definite articles, including some countries or territories that are or were comprised of smaller units.	the Atlantic Ocean, the Antarctic, the White House the United States, the United Kingdom, the Philippines, the Soviet Union"

III AGREEMENT PROBLEMS

A.Subjects joined by " AND" usually take a plural verb.

Ex: AVOID: "*Skyrocketing charges for data preparation, the need to keep pace with rapidly increasing amounts of data AND requirement for fast system response HAS led to a search for more efficient input devices*".

WRITE: "Skyrocketing charges for data preparation, the need to keep pace with rapidly increasing amounts of data AND requirement for fast system response HAVE led to a search for more efficient input devices".

B..With "NEITHER"/"NOR" and "EITHER"/"OR", the verb agreement depends on the noun closest to the verb.

Ex: "*Neither the pump nor **the valves** meet specifications". (plural)*

"*Neither the valves nor **the pump** meets specifications".*
(singular)

C. When the subject is a phrase or clause acting as a unit the verb takes the singular forme:

Ex:

AVOID: "**Reversing the direction of currents** through the wires **change** the magnetic state of the core".(the subject is a phrase, the verbe should take singular forme)

WRITE: "**Reversing the direction of currents** through the wires **changes** the magnetic state of the core".

D.When the subject is a word like "EACH", "EVERY", "NONE", "EITHER", "NEITHER", "NO ONE", and "NOBODY", especially when followed by a plural object of a preposition, the verb takes the singular forme:

Ex:

AVOID: "**Each** of the steps in the process are treated in a separate chapter of this report".

WRITE: "Each of the steps in the process is treated in a separate chapter of this report".

E..When the normal subject-verb order is inverted look for the real subject carefully

Ex:

AVOID: "Equivalent to more than 3000 punched cards are the single *diskette*, first introduced in 1972".

WRITE: "Equivalent to more than 3000 punched cards is the single diskette, first introduced in 1972".

(Examples were taken from McMurrey, D. A. 2017.Online Technical Writing: Free Online Textbook for Technical Writing.)

IV. COMMONLY MISUSED WORDS

a).Insure /ensure/assure/secure

❖ *"Assure"* means to declare earnestly or confidently; **give someone confidence**(for things that are alive).

Ex: She assured us that the money will be secure.

❖ *"Ensure": is used to guarantee events, to make sure or certain.*

Ex: We will ensure that the parts will be delivered on time*.*

❖ *"Secure":* 1. *means to free from danger or harm; to protect:(*for things and places)*,*
    2. *to attach, stick, fix, bind*

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Ex1 : The wall was originally built to secure the town from attack.

Ex 2 :The frames are secured by horizontal rails to the back wall.

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> ❖ ***"Insure": means all the above <u>in financial context</u> ; to guarantee or secure indemnity against loss or harm.***

Ex:I <u>assured</u> him that I <u>ensured</u> the car <u>was insured</u>.

b).Amount of/Number of

"Amount of" refers to things that are **measured**.

Ex: The device redirects <u>the amount of</u> heat coming out of the oven.

"Number of" refers to things that **can be counted**.

Ex: The <u>number of</u> parts that were missing was recorded.

c).Comprise/Compose

"Comprise" means to include, contain, or consist of.

Ex: Data management <u>comprises</u> many more specialized areas of study.

"Compose" means to be made of parts.

Ex: The device <u>is composed *of*</u> many mobile parts.

d).Could/Would

"Could" is the past tense of **"can"** and means to have the ability to do something.

Ex: Could a biosensor be used to detect pathogenic contamination in food, water and the environment?

"Would" is the past tense of **"will"** and is used to ask someone to commit to an action.

Ex: Would you call me when you have finished the experiment?

e).Datum/Data

A "datum" is singular; "data" is the plural form of "datum".

Ex: The datum appears to be in error.(singular).

The data were collected in the laboratory.(plural)

f).Further/Farther

"Further" indicates progression to a greater extent or degree.

Ex: The team is further along in their research and experimental design than expected.

"Farther" indicates more physical distance in space or time.

Ex: The team ran over 100 miles, which was farther than anticipated.

g).Fewer/Less

"Fewer" is used in relation to a number of items.

Ex: The device needs a fewer number of pieces than anticipated.

"Less" refers to a smaller extent or shows a lower importance.

Ex:The heat required was less than we expected.

h) .e.g./ i.e and et al

There are a few Latin terms that are still commonly used in English academic writing. Some confuse the two terms and use them incorrectly. Here are some helpful hints and examples.

"e.g". is the abbreviation for the Latin term " exempli gratia" meaning " for example". A period follows each letter, then a comma, which is followed by the example given; this abbreviation is typically used to introduce one or more examples of something mentioned previously in the sentence and can be used interchangeably with "for example" or "such as". The use of e.g. implies that there are other examples not mentioned in the list ,therefore, do not use ETC. in the same list. Here are some examples:

Ex: The value is 1, but you can set it to another value, e.g. 100".

"i.e". is the abbreviation for the Latin term " id est"and means " that is" or " in other words. This abbreviation is used when you want to clarify something mentioned previously; it can be used interchangeably with "specifically" or "namely". Here are some examples:

Ex: Previously derived and readily available analytical results can be quoted with a suitable reference; i.e., equations from a text.

To sum up , **e.g.** *provides examples so it tends to increase the number of options, while* **i.e.** *provides clarification or precise information so that it tends to narrow down the number of options.*

"et al". is the abbreviation for the Latin term " et alii" and means "and others".

Ex: The article was written by Jones et al.

h).Well/Good

" Well" is an **adverb**, which means that it modifies verbs, adjectives, and other adverbs. *"Good"* is an **adjective** which means that it modifies nouns.

Ex: You **speak** English **well** /vs/ Your **English** is **good**.

i). Between/Among

They are not interchangeable! " Between" should be use to compare two things,whereas "among" should be used to compare three or more.

Ex: between two choices/vs/ among the three choices

Remeber that "among" is also used to describe results within the same group,such as „among participants in the experiment".

(*Section IV was adapted from Technical Writing Guide, Michigan State University,2007*)

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V.JUST FOR LAUGH and….DO NOT FORGET TO: DOUBLE-CHECK UNFAMILIAR WORDS OR PHRASES!

Here are some examples of misused words encountered in the articles submitted to be published in INCAS Bulletin

<u>Ex:</u> **AVOID:** *"Predisposed teams toward errors need a monitor-evaluation". (INCAS BULLETIN)*

WRITE: Errors-prone teams need a monitor-evaluator**.**

AVOID: *"I am engaged to INCAS "(sic!) (CV)*

WRITE: I am employed by INCAS; I am an INCAS employee/I work with/at INCAS.

AVOID: *"We will considerate" (INCAS BULLETIN)*

WRITE: We consider

AVOID: *"To catch the panel" (INCAS BULLETIN)*

WRITE: To attach the panel

AVOID: **"***Time-eating load***"** *(INCAS BULLETIN)*

WRITE: time-consuming task

AVOID: **"***Composites possess high strength***"** *(INCAS BULLETIN)*

WRITE: Composites have high strength

AVOID: **"***The fluid pursues the solid surface***"** *(INCAS BULLETIN)*

WRITE: The fluid follows the solid surface

AVOID: **"***Resistance of the plane to progress***"** *(sic!) (INCAS BULLETIN)-This is a google translation for "rezistenta la inaintare"!!!*

WRITE: drag

AVOID: **"***Two fluid jets can coalescence***"** *(Coalescence =noun!) (INCAS BULLETIN)*

WRITE: Two fluid jets can coalesce. (Coalesce= Verb!)

AVOID: **"***The new students become orientated***"** *(INCAS BULLETIN)*

WRITE: The new students become oriented*.*

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It is my hope that this handbook will help you improve your writing skills and become stronger writers for a successful academic career!

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