Academic Writing for Researchers: Some Guidelines

It is a regrettable fact that although researchers spend a great deal of time writing, only a very small percentage of research papers and reports are well-written. Writing is one of the most taxing jobs around, especially if you want to do it skillfully. Most writers struggle some of the time with ideas that are difficult to express, sentences that will not take shape, and words that are not precise. Most research writing falls short of the standard because it does not efficiently communicate the results of the research--they are not well-structured, much of what is written is full of muddled jargon, and is not in short, clear, understandable English.

Why is research writing weak? There are many reasons:

1. The subject matter of research writing is usually complex.
2. Researchers often don't allocate enough time and attention for presenting their thesis in the proper form and format.
3. They tend to postpone writing until after their final year.
4. It is not at all easy both to say what you want to say and to say it in the best possible way at the same time.
5. The principal reason is that most researchers don't know what strong research writing is. Most of them never receive any formal training in research writing. The biggest influence on how researchers write comes from other research papers they have read, not from any rules they have remembered.

The more you write, the easier it will be, but remember, that experienced writers know that writing never happens magically. During this lecture you would hear about the nature and characteristics of research writing and some practical suggestions for effective research writing.

Unlike other forms of writing, research writing has a single defined purpose: to inform a particular audience about a particular research project. It is a craft--not an inspiration craft but a perspiration craft--which a writer must constantly hone. No matter how extensively knowledgeable or brilliant a researcher is, it is his written expression which sits in judgment upon him. If his writing is weak, he is guilty of expressing himself so that others cannot understand him. A little practice should help you to achieve an easy, natural style.

What are the basic principles of research writing? Any research writing is characterized by **clarity, consiseness, simplicity,** and **accuracy.**

Basic principles of research writing

Clarity

Information should be clear and understandable

 a. Use exact, specific words
 b. Follow conventional usage
 c. Organize material logically

If one sentence is weak, your language falters and your readers stumble. If you aim at clarity,

don't write

> *His expression of ideas that are in disagreement with those of others will often result in its rejection by them and his isolation from the life around him.*

This kind of writing bewilders. It is wordy and pompous. When revised, the passage reads as

follows:

> *If he expresses ideas that others disagree with, he will often be rejected by them and isolated from the life around him.*

If a writer understands his own idea and wants to convey it to others, he is obliged to render it in clear, orderly, readable, understandable prose. Actually, the writer who is obscure is usually confused himself, uncertain of what he wants to say or what he means.

Conciseness

One way to achieve clarity is to be concise.

Saying much in a few words, making every word count

 a. omit non-essential words and repetitions
 b. use simple words
 c. make sentences positive
 d. eliminate wordy introductory/pretentious words and phrases

For example, change

> ***In connection with*** *your recent accident, we must **discontinue** your insurance **due to the fact that** this is your third claim within the past year. In as much as you were insured with us **at the time of the accident, we are prepared** to honour your claim **along the lines** of your policy.*

to

> *Concerning your recent accident, we are cancelling your insurance because you have filed three claims in the past year. Since you were insured with us at the time of the accident, however, we will honour your claim.*

Simplicity

Another basic quality of effeicive writing is simplicity. If research writing is simple, there is

much greater chance of being undestood. Most sentences in research writing are needlessly

complex. They average over twenty-five words, which is long. You can achieve simplicity by using simple words and avoiding convoluted sentence structures.

      a.   Use short, simple sentences
      b.   Use long and medium length sentences to provide variety

Look at the following example on racquetball:

> *John told Phil that to achieve more control over the ball, he should practice flicking or snapping his wrist, because this action is faster in the close shots, and placing a shot requires only a slight change of the wrist's angle instead of an acute movement of the whole arm, which gives a player less reaction time.*

This sentence is needlessly overpacked. It has fifty-seven words and the structure is convoluted. The sentence has no symmetry--it just wanders. Consider the same information presented with simplicity and precision.

> *John told Phil that to achieve more control over the ball, he should practice flicking or snapping his wrist, because this action is faster in the close shots. Placing a shot requires only a slight change of the wrist's angle, instead of an acute movement of the whole arm, which gives a player less reaction time.*

A fairly long sentence. Nevertheless, the sentence is strong--it is precise and clear.

Accuracy

Providing accurate and factual information. A researcher must be accurate in his writing. No matter how clear, how concise, and how simple research writing has been, it is not going to be effective unless it is accurate. Accuracy in research writing means being specific. For example, don't tell your readers

> *My neighbor bought a really nice old desk.*

Why nice? How old? What kind of desk?

Revision:

> *My neighbor bought a solid oak roll top desk made in 1885 that contains a secret drawer triggered by a hidden spring.*

Although this second sentence uses a few more words, it tells readers something concrete, a detail they might remember.

Another example:

> *The salary deflations will most seriously impact the secondary educational profession.*

This sentence is needlessly weak. Revision gives

> *High school teachers will suffer the biggest salary reductions.*

Thus, the watchwords for the researchers are **clarity, conciseness, simplicity,** and **accuracy** and that good writing is clear and direct, never wordy, cloudy or ostentatious.

It was Anatole France who said: "There are three requisites for all good writing; the first is clarity, the second is clarity, and the third is clarity." The easiest way to achieve clarity is to be concise, simple, and accurate. The enemies of those four qualities are:

Pompous and Unfamiliar Words
Abstract Words
Padding or Verbosity (too many words, writing zeroes)
Circumlocution (the round about procession of words)
Redundancies and Repetitions
The Passive Voice (the weak arrangement of words)
Cliches, Slang, and Jargons (Worn-out, hackneyed words and
   careless words of doubtful meaning, words with
   specialized meaning)
Gobbledygooks

When in doubt, strike down these enemies of clarity.

Choice of Words

Rules for Choice of Words

1. Prefer the familiar word to the far-fetched
2. Use concrete words, not the abstract
3. Use the single word instead of the circumlocution
4. Prefer the short word/words to the long
5. Prefer the Saxon word to the Romance
6. Use words which mean what you mean
7. Eliminate redundancies
8. Eliminate writing zeroes
9. Avoid Passive constructions
10. Avoid cliches and slangs

The skillful writer chooses words with precision and groups them in a way that cannot possibly arouse uncertainty in the mind of the attentive reader.

Here are some rules for the choice of words:

A. Pompous and Unfamiliar words

Prefer the familiar word to the far-fetched

"start"	not	*"initiate"*	*"make"*	not	*"render"*
"send"	not	*"transmit"*	*"part"*	not	*"component"*
"use"	not	*"utilize"*	*"about"*	not	*"approximate"*
"meet"	not	*"interface"*	*"so"*	not	*"consequently"*
"adjacent"	not	*"contiguous"*	*"show"*	not	*"demonstrate"*

All these words have infested research writing. To inform your reader, you must use language that your reader understands. Simple, unpretentious words directly convey a message. Pompous words use empty, elegant words and phrases. Do not use

"It was noted by this writer"	instead of	*"I saw"*
"In the proximity of"	instead of	*"near"*
"Prior to"	instead of	*"before"*
"Afford the opportunity to"	instead of	*"permit"*

Use the shorter and familiar word.

"now"	not	*"at this point in time"*
"measure"	not	*"make measurements of"*
"propose"	not	*"make a proposal"*
"whether"	not	*"the question as to whether"*
"then"	not	*"at that point in time"*
"can"	not	*"has the potential to"*
"because"	not	*"owing to the fact that"*
"study"	not	*"perform a study"*

The sudden appearance of an unfamiliar term, no matter how accurately it embodies your meaning, will distract your reader's attention and impair communication. Define unfamiliar words and keep abbreviations to the minimum .

> *For the first year, the links with SDPC and the HAC were not connected, and all required OCS input data were artificially loaded. Thus CATCH-22 and MERWIN were not available.*

These sentences read like a cryptogram. Whenever possible, you should use common words, not unfamiliar abbreviations.

> *Because some of the links in the computer system were not connected the first year, we could not run all the software codes.*

Avoid pretentious words for they offer no clarity and no continuity to writing.

B. Abstract versus Concrete Words

Abstract words or vague words defeat preciseness because they do not convey the writer's meaning directly and clearly. What are abstract words? What are concrete words?

Well, abstract words are those words separated from matter, like *"thought,"* whereas concrete words are those which are things, rather than qualities, like "*brain."* "*Man*" is concrete. It is a physical object. "*Humanity"* is abstract. It is a quality possessed by man. You cannot see "*humanity,"* but you can see "*man."* Abstract words are imprecise because they can

mean many different things. Some familiar abstracts are : *"Situation," "Condition," "Position."* Beware of such words.

Don't Write :

> *It was a **meaningful** meeting.*
>
> *The meeting helped both sides understand each other's position.*

In the first sentence, *"meaningful"* ironically conveys no meaning at all. See how the revised sentence says specifically what made the meeting meaningful.

> *The situation in regard to gold is causing alarm.*

What situation? In what regard? Why alarm? The sentence may mean several things to several different people, but if we use the concrete, we say *"Gold is scarce."* Then everyone knows what we mean.

> *Marcia is a very interesting person.*
>
> *Marcia is witty, intelligent, and talented.*

Note, also, how concise the statement becomes when it is concrete. It obeys all four qualities of effective research writing.

Although abstract words may at times be appropriate to your topic, their unnecessary use creates dry and lifeless writing. There are two main reasons:

1. Abstractions cause statements to be made in a roundabout instead of a direct way and the meaning is more difficult to grasp.
2. Abstract nouns have less precise meanings than concrete ones. They should be avoided if you want your meaning to be plain.

C. Padding, Verbosity, the Use of Empty or Useless Words (Writing Zeroes)

Some good examples of this very common fault in writing are phrases like:

> *It will be noted that ...*
> *It will be appreciated that ...*
> *It is interesting to note that ...*

What does *"It will be noted that"* mean? The answer is nothing, yet the type of writer who puts in these empty words once will do it a dozen times and in a paper of three or four pages we will find six or seven lines which mean nothing. Is that effective writing?

Instead of writing,

> *It will be noted that tomorrow is Sunday and the stores will closed*

all we need to write is,

> *Tomorrow is Sunday and the stores will be closed.*

Certain phrases have no meaning at all. There are zeroes in your writing--voids that offer no information to your readers. Eliminate such writing zeroes.

> **It is interesting to note that** *the rational mind of Sindi starts evaluating the meaning of her existence.*

The phrase "it is interesting to note that" is a zero. If the fact about Sindi's evaluation of her existence isn't interesting, then you shouldn't include it. If the fact is important, then you should find a stronger way to signal its importance.

> Sometimes, writing zeroes raise undesirable questions.

> *The requirements* **to be met** *for the measurement system include ...*

This sentence implies that there are requirements which will not be met. The phrase "to be met" is dangerously superfluous.

Some other common writing zeroes include

I might add	*as a matter of fact*
It should be pointed out	*the fact that*
It is significant	*in a manner of*
It is noteworthy	*is used to*
It is the primary intent of	*the use of*
In the case of	*in relation to*
In connection with	*as is well known*

Away with such nonsense. Eliminating zeroes doesn't just save a few minutes of reading time; it invigorates your writing.

Similarly, the phrases in "**As is well known**, *the use of gaseous insulation is becoming increasingly widespread*" or "*The figure* **clearly demonstrates** *the use of Raman spectroscopy*" or "**It is obvious . . .**" reek with arrogance. The tone of researxh writing should not be arrogant.

 And the same with such phrases as:

 Do not use

regardless of the fact that	use	"although"
due to the fact that	use	"although"
as to whether or not to	omit	"as to" and "or not"
it is believed that	use	subject + "believes"
by means of	use	*"by"*

What do all these things mean? The answer is nothing.

There are other choice phrases:

> **You will moreover observe** *that women are beautiful.*

This phrase is almost an insult. The writer is assuming that the last part of the sentence "*women are beautiful*" cannot be understood by the reader, that the reader has not this power of discernment.

Don't say

>   *In the case of unmarried personnel they will be given ten days' notice.*

Say: *Unmarried personnel will be given ten days' notice.*

Other choice bits of padding are:

>   *for your information   for your benefit*

Example: *I have received your letter of 4 December, and **for your information** the following extract from regulations under the Act is quoted **for your benefit.***

>   It is obvious that it is "*for your information*" and *"for your benefit".*   Therfore to state the obvious is a waste of words.

D. Circumlocution (Long variants)

Here we have the roundabout procession of words--the elongated form of words used only to impress.

as regards	*in the case of*
as to	*in connection with*
in respect of	*in the neighbourhood of (about)*
...and so on	*for the reason that (because)*

Here is a circumlocution:

>   *I should be glad if you would be good enough to confirm the settlement, and it would be of assistance to me if you are prepared to state the terms thereof and the approximate proportion of the full claim which such settlement represents.* (Indirect, 43 words)

The same statement, when rewritten, becomes

>   *Will you please confirm the settlement. It would help me if you tell me its terms, and how the amount compares with your full claim.* (Direct, 25 words)

Use the single word instead of the circumlocution.

"no"	not	*"the answer is in the negative"*
"scarce"	not	*"in short supply"*
"some"	not	*"a percentage of"* or *" a proportion of"*
"because"	not	*"due to the fact that"*
"consider"	not	*"take into consideration"*
"capacity"	not	*"full capacity"*

Prefer the short word or words, to the long.

"carry out"	rather than	*"implement"*
"died before"	rather than	*"predeceased"*
"able to walk"	rather than	*"capable of locomotion"*
"as soon as possible"	not	*"with the minimum of delay"*
"go"	not	*"proceed"*
"so"	not	*"consequently"*

Prefer the Saxon word to the Romance. The Romance is usually pompous or unfamiliar.

"steal"	not	*"purloin"*	*"many"*	not	*"numerous"*
"ground"	not	*"terrain"*	*"cause"*	not	*"facilitate"*
"part"	not	*"component"*	*"finish"*	not	*"finalise"*

Use words which mean what you mean.

Don't write *"liable"* if you mean *"likely."* *"Liable"* means that your subject is going to suffer something prejudicial.

He is liable to a fine for speeding.
He is likely to get his majority.

Many word choices are difficult; you need one particular word and no other word will do. Some words have similar meanings, yet are not interchangeable. Using synonyms is not a mark of a good writer. Most professional writers don't hesitate to repeat a word if that word is the right word.

E. Redundancies and Repetitions

Redundancies are needless repetition of words. Redundancies either repeat the meaning of an earlier expression or else make points implicit in what has been stated.

The aluminium metal cathode became pitted during the experiment.

After "aluminium," the word "metal" is redundant.

The use of gaseous insulation is becoming increasingly more widespread.

The verb phrase "*is becoming increasingly more widespread*" is doubly redundant. Revision gives

Scientists are using gases more as insulators.

Again,

He repeated the winning bingo number over again.

"Repeated" means "to say again," so there is no need for "over again."

Change

Bringing the project to final completion three weeks early, the new manager earned our respectful regard when the project was completed.

into

The new manager earned our respect for completing the project three weeks early.

Below is a list of common redundancies in research writing. The words in parentheses should be deleted.

(already) existing	*introduced (a new)*
(alternative) choices	*mix (together)*
at (the) present (time)	*never (before)*
(basic) fundamentals	*none (at all)*
(currently) under way	*now (at this time)*
(completely) eliminate	*period (of time)*
(continue to) remain	*(private) industry*
(currently) being	*(separate) entities*
(empty) space	*start (out)*
(first) began	*(still) persists*
had done (previously)	*whether (or not)*
climb (up)	*fell (down)*
(final) outcome	*red (in color)*

There are many more. Everyone writes redundancies in early drafts. You must catch redundancies in your editing. An effecitive way is to read through with the sole intention of cutting words--no additions allowed.

F. The Passive Voice

As you probably recall from your school days there are two voices.

1. The active voice   2. The passive voice

The active voice is where the subject performs the action of the verb.

Example :   *Professor Higgins teaches public speaking.*

1. *"Professor Higgins"´* - subject; *"teaches"* – verb; *"public speaking"* – object.

When, however, the subject suffers the action, the verb is said to be in the passive and we call it the passive voice. The emphasis is shifted to the object instead of the subject.

Example: *Public speaking is taught by Professor Higgins.*

2. *"Public speaking"* becomes the subject: *"Professor Higgins"* is merely the agent of the verb.

The passive voice is generally agreed to be weak, cumbersome, and confusing. Usually, there is an increase in words, i.e. verbosity, a lack of power; the act is not as easily pictured by the mind of the reader. The verb has no strength.

Many researchers hold the misconception that research papers and reports should be written in the passive voice. However, the purpose of research writing is to inform as efficiently as possible, and the most efficient way to inform is through strong, straightforward writing--

writing that uses the active voice. Needlessly passive verbs slow your writing; they reduce your writing's efficiency.

Much passive voice arises in research writing because researchers cling to the misconception that they can't use the first person ("I" or "we"). Well, Einstein used the first person. He was not only a great scientist, but a great research writer. Faraday used the first person; so did Watson, Curie, Darwin, Lyell, Freud, and Lister. As long as the emphasis of your writing remains on your research and not on you, there is nothing wrong with using the first person in your paper. Also, avoiding the first person leads to unnatural wording.

In this paper, the author assumed that all collisions were elastic.

The phrase *"the author assumed that"* is silly. The reader can see the author's name on the paper. Using the word *"author"* instead of *"I" or "We"* suggests that the writer of the paper wasn't the researcher. Other awkward phrases include

It was determined that ...
It was decided that ...
It was realized then that ...
It was reported by Engineering that the new relay is defective

These phrases suggest that there was some absolute force--the IT force--writing the paper. Sometimes writers using the passive voice fail to name the performer--information that might be missed.

The problem was discovered yesterday.
The Engineering department discovered the problem yesterday.

Very often, the passive can be just plain confusing, especially when used in instructions:

Plates B & C should be marked for revision. (Are they already marked?)

You should mark plates A & B for or *Mark plates A & B for revision*

G. Cliches, Slangs, and Jargons

Cliches, slangs, and jargons are to be avoided in writing, even more so in speech. Cliches are hackneyed, worn-out, over-worked words or phrases which do little but show the writer's barren brain in full relief. They must be avoided, for they are usually wordy and often vague.

quick as a flash (quickly)
straight from the shoulder (frankly)
last but not least (last, finally)
as plain as day (clear, obvious)
the modern business world (business today)

> *Crack of dawn (early morning)*
> *Dead of night (late night)*
> *First and foremost (in the beginning)*
> *To make a long story short (to summarize)*

These may have been good in the days of their youth, but now in their decrepitude they merely annoy readers and point out that their user is without adequate reserves of good English. Most cliches are imprecise and unclear.

> *Let us knock our heads together and figure out a solution.*

This kind of writing is just plain silly. Unless you enjoy being laughed at, eliminate cliches from your writing. Consider the following paragraphs, first with cliches and then rewritten without them:

> *Our new computer system will have a positive impact on the company **as a whole.** It will keep us **abreast of the times** and make our competitions **green with envy.** The committee deserves a **pat on the back** for its **herculean efforts** in convincing management that it was the **thing to do**. I am sure that their **untiring efforts** will not **go unrewarded.***

Revision

> *Our new computer system will have a positive impact throughout the company. It will keep our operations up-to-date and make our competition envious. The committee deserves credit for their efforts in convincing management of the need for the computer. I am sure that the value of their efforts will be recognized.*

Slang refers to a manner of expressing common ideas in new, ofter humorous or exaggeratd ways. It may be acceptable in face-to-face conversation, but it has little place in writing. When it is committed to paper, it loses much of its spice and only condemns the writer in the eyes of those who may not have the same sense of humour.

Slang often finds new use for familiar words (He **crashed** early last night--meaning that he went to bed early) or coin words (He's a **kook-** meaning that he is off-beat, unconventional).

Two familiar examples:

> *"laid on,"*   when you mean   *"arranged"* or *"organized"*
>
> *"tidied up,"*   when you mean   *"completed"*

Don't allow slang to give your writing a flippant tone that distracts from a serious discussion.

Avoid unnecessary jargon. Ineffective writers choose jargon words. By *jargon,* we mean *officialese, bureaucratese, legalese, buss words, etc.*—words that garble your meaning.

One prevalent kind of jargon is caused by writers inappropriately using terminology associated with their field: professional jargon. Every profession has its jargon. An economist might write

> *The choice of exogenous variables in relation to multi-collinearity is contingent upon the deviations of certain multiple coefficients.*

instead of

> *Supply determines demand.*

A lawyer might write

> *This policy is used in consideration of the application therefore, copy of which application is attached hereto and made part hereof, and of the payment for said insurance on the life of the above named insured.*

instead of

> *Here is your life insurance policy.*

Jargon: *The departmental head has come to the recognition that the utilization of verbose verbalization renderd informational content inaccessibe.*

Revised: *The head of the department recognizes that wordiness confuses meaning.*

Always select the plainest, most direct words you know. In other words, professional jargon makes writers feel elite and important, but readers feel left out, unimportant, and are unable to comprehend.

Gobbledygook (Bombast and pedantic writing)

Gobbledygook is a combination of all the items mentioned so far. It is writing that suffers from an overdose of traits guaranteed to make it stuffy, pretentious, and wordy. It includes the over use of big and mostly abstract words, inappropriate jargon, stale expressions, euphemisms, jammed modifers, and dead wood.

Consider the following staement from an auto repair release form:

> *I hereby authorize the above repair work to be done along with the necessary material and hereby grant you and/or your employees permission to operate the car or truck herein described on streets, highways, or elsewhere for the purpose of testing and/or inspection. An express mechanic's lien is hereby acknowledged on above car or truck to secure the amount of repairs thereto.*

Revision

> *You have my permission to do the repair work listed on this work order and to use the necessary material. You may drive my vehicle to test its performance. I understand that you will keep my vehicle until I have paid for all repairs.*

Translated into straightforward English, the statement gains in clarity what it loses in pomposity without losing its legal meaning.

Gobbledygook is packed with unusual words when more common ones would be clearer; it is heavy with foreign words when their English equivalents would be more appropriate; and it generally stresses trivial matters in the hope that the reader will be impressed with the writer's mental agility. George Orwell parodied such writing in the essay "Politics and the English Language," from which the following excerpt is taken.

> *Objective consideration of contemporary phenomena compels the conclusion that success or failure in competitive activities exhibits no tendency to be commensurate with innate capacity, but that a considerable element of the unpredictable must invariably be taken into account.*

This type of English must be abandoned by everyone of us. The following revision of Orwell's passage demonstrates the clarity of direct writing.

> *Success or failue today depends as much on chance as on your capabilities*

Therefore, never be guilty of "gobbledygook." It is not the hallmark of the literary giant; it is the brand on the brow of the unlettered pigmy.

Sentence Arrangement

Reduce sentences to their simplest forms. According to William Strunk and E.B.White, "a sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should have no unnecessary lines and a machine no unnecessary parts. This requires not that the writer make all his sentences short or that he avoid all detail … but that every word tell." The writer should accept this as his basic responsibility: that he inflicts no unnecessary words on the reader – just as a dentist inflicts no unnecessary pain, a lawyer no unnecessary risk.

Reducing sentences to their simplest forms makes them easier to understand.

> *Following observance of this occurrence, it was determined…*

These eight words can be reduced to three:

> *We then determined…*

Most research writing is full of fat. Fat slows the writing and tires the reader. Much fat in research writing arises from needless use of the passive voice:

*Anxiety and emotional conflict are lessened when latency sets in. The total personality is oriented in a repressive, inhibitory fashion so as to maintain the barriers, and what Freud has called "psychic dams," against psychosexual impulses. (3*6 words)

Making the verbs active gives

When latency sets in, anxiety and emotional conflict lessen. The personality inhibits itself, maintaining its barriers—Freud's "psychic dams"—against psychosexual impulses. (22 words)

Not only does this revision save fourteen words; it also invigorates a dead paragraph.

Other common fat phrases in research writing and their reductions are given below:

At this point in time	*now*
At that point in time	*then*
Has the ability to	*can*
Has the potential to	*can*
In the event that	*if*
On the vicinity of	*near*
Owing to the fact that	*because*
The question as to whether	*whether*
There is no doubt but that	*no doubt*

Many sentences acquire fat because researchers have converted verbs into nouns.

Our laboratory performed the research and development of…

A stronger, tighter sentence is

Our laboratory researched and developed…

Some other verbs whose energies are frequently lost in nouns are

Perform a study	*study*
Have a tendency	*tend*
Make use of	*use*
Make measurements of	*measure*
Make a decision	*decide*
Make a proposal	*propose*

Fat sentences make for slow reading. You can never eliminate all the fat in your writing, but you can reduce it.

How long should a sentence be? People often ask for yardsticks here. Well, Rudolph Flesch, an expert in writing, defines "standard" English as that level of writing found in **Reader's Digest** or **Newsweek,** and here sentences average 17 words. In Queen Elizabeth I's day, the average written sentence ran to about 45 words; the Victorian sentence to about 29 words, and ours to 20 or fewer. In most research papers, sentences are too long--they average over 25 words.

Remember that short sentences avoid the pitfalls of grammar and punctuation, and therfore obscurity of meaning. However, some variety in length of sentences is desirable so that the reader is not jolted and jerked continuously. Too much starting and stopping makes unpleasant reading. Therefore, change your sentence length every two or three sentences; keep your average length in the teens; and occasionally, use a very short or very long sentence.

The Essentials of the Paragraph

The paragraph is the basic unit of writing. It is necessary to know how to write good paragraphs because paragraphs are the building blocks of all your writing: essays/compositions, reports, theses, or dissertations. When you write a paragraph, all the sentences in the paragraph must be related to one another and must develop a central idea. If all the sentences contribute to the reader's understanding of the main idea, then you have achieved unity in your paragraph. A paragraph that has one or more unrelated sentences in it lacks unity. If paragraphs are created with care, they are of great value to the reader in following the writer's logical development of thoughts and arguments.

Don't ask your reader too much without a break. The paragraph is **not a unit of length but a unit of thought**. Do not contain in one paragraph sentences which do not have unity of thought among themselves. A paragraph should be a complete development of a topic.
If all the sentences in the paragraph contribute to the reader's understanding of the main idea, then you have achieved unity in your paragraph.

The number of sentences in a paragraph is unimportant; however, each sentence must aid in the development of the central idea. Thus, a paragraph may be as short as 50 words or as long as 300 words.The average length of a paragraph in a piece of serious writing is about 150 words. In a complex research paper, readers will typically tire after about 15 lines. When you see several paragraphs on a page, or a paragraph of a page or more in length, you should look for lack of unit--undeveloped topics in the first case, or a multitude of topics in one paragraph in the second case.   If you practice conciseness, you can probably say all you need about a topic in under 150 words. A short paragraph is an excellent way to accent an important result, particularly if the short paragraph follows a long one. **Be careful: too many short paragraphs, just like too many short sentences, will make your writing choppy.**

Therefore, learn to write, ladies and gentlemen, learn to write with **Clarity, Conciseness, Simplicity,** and **Accuracy.** It will make it possible for you to write with increased efficiency. One of the beauties of writing is that you never stop learning. With each paper, you improve

your craft. The better you understand the writing process, the better you will write and the more you can enjoy writing.

Acknowledgment