

Chapter 02: English grammar in scientific writing:

1- English Tenses in scientific language:

In scientific style, tenses denote the time of action. They show when the work is done. English tenses are:

✚ Present Tenses:

The present tense refers to the action or event that takes place or is taking place in the present. It represents the current activity or the present state of being of the subject in the given context.

- **Simple Present:** It is used to denote scientific facts, universal truths and work done on daily basis.

Assertive form: sub + V1 + s/es + object.

Negative form: sub + does not + V1 + object.

Interrogative form: Does + sub + V1 + object?

Example: 1) Technology [helps](#) humanity to enhance their quality of life.

2) Technology [does not help](#) humanity to enhance their quality of life.

3) [Does](#) technology [help](#) humanity to enhance their quality of life?

- **Present Continuous:** It is used to express an action taking place at the time of speaking.

Assertive form: sub + is/am/are + V1 + ing + object.

Negative form: sub + is/am/are + not + V1 + ing + object.

Interrogative form: is/am/are + sub + V1 + ing + object?

Example: 1) Technology [is helping](#) humanity to enhance their quality of life.

2) Technology [is not helping](#) humanity to enhance their quality of life.

3) [Is](#) technology [helping](#) humanity to enhance their quality of life?

- **Present Perfect:** It is used to show an action that started in the past and has just finished.

Assertive form: sub + has/have + V3 + object.

Negative form: sub + has/have + not + V3 + object.

Interrogative form: has/have + sub + V3 + object?

Example: 1) Technology [has helped](#) humanity to enhance their quality of life.

2) Technology [has not helped](#) humanity to enhance their quality of life.

3) [Has](#) technology [helped](#) humanity to enhance their quality of life?

- **Present Perfect Continuous:** It shows the action which started in the past and is still continuing.

Assertive form: sub + has/have + been + V1 + ing + object.

Negative form: sub + has/have + not been + V1 + ing + object.

Interrogative form: has/have + sub + been + V1 + ing + object?

Example: 1) Technology [has been helping](#) humanity to enhance their quality of life.

2) Technology [has not been helping](#) humanity to enhance their quality of life.

3) [Has](#) technology [been helping](#) humanity to enhance their quality of life?

✚ **Past Tenses:**

The past tense is used to talk about past states of being, or events. It describes a completed action that took place at a specific point in the past.

- **Simple Past:** Used to indicate an action completed in the past. It often occurs with adverb of time. Sometimes it is used without an adverb of time and for past habits.

Assertive form: Subject + V2 + Object.

Negative form: Subject + didn't + V1 + Object.

Interrogative form: Did + Subject + V1 + Object?

Example: 1) Technology [helped](#) humanity to enhance their quality of life.

2) Technology [did not help](#) humanity to enhance their quality of life.

3) [Did](#) technology [help](#) humanity to enhance their quality of life?

- **Past Continuous Tense:** Used to denote an action going on at some time in the past.

Assertive form: Subject + was/were + V1+ ing + Object.

Negative form: Subject + was/were + not + V1+ ing + Object.

Interrogative form: Was/were + Subject + V1+ ing+ Object?

Example: 1) Technology [was helping](#) humanity to enhance their quality of life.

2) Technology [was not helping](#) humanity to enhance their quality of life.

3) [Was](#) technology [helping](#) humanity to enhance their quality of life?

- **Past Perfect Tense:** Used to describe an action completed before a certain moment in the past, usually a long time ago. If two actions happened in the past, past perfect is used to show the action that took place earlier.

Assertive form: Subject + had + V3 + Object.

Negative form: Subject + had + not + V3 + Object.

Interrogative form: Had + Subject + V3 + Object?

Example: 1) Technology [had helped](#) humanity to enhance their quality of life.

2) Technology [had not helped](#) humanity to enhance their quality of life.

3) [Had](#) technology [helped](#) humanity to enhance their quality of life?

- **Past Perfect Continuous Tense:** Used to indicate an action that began before a certain point in the past and continued up to another point in past.

Assertive form: Subject + had been + V1 + ing + Object.

Negative form: Subject + had + not been + V1+ ing + Object.

Interrogative form: Had + Subject+ been+ V1 + ing + Object?

Example: 1) Technology [had been helping](#) humanity to enhance their quality of life.

2) Technology [had not helping](#) humanity to enhance their quality of life.

3) [Had](#) technology [been helping](#) humanity to enhance their quality of life?

✚ **Future Tenses:**

The future tense refers to represent an action that is going to happen or will be continuing to happen in the future.

- **Simple Future:** This tense tells us about an action which has not occurred yet and will occur in future. In Future Tense ‘Shall’ is used with ‘I’ and ‘We’. ‘Will’ is used with all others. When you are to make a commitment or warn someone or emphasize something, use of 'will/shall' is reversed.

Assertive form: Subject + Will/Shall + V1 + Object.

Negative form: Subject + Will/Shall + Not + V1 + Object.

Interrogative form: Will/Shall + Subject + V1+ Object?

Example: 1) Technology [will help](#) humanity to enhance their quality of life.

2) Technology [will not help](#) humanity to enhance their quality of life.

3) [Will](#) technology [help](#) humanity to enhance their quality of life?

- **Future Continuous Tense:** It is used to express an ongoing or continued action in future. The action will start in future (tomorrow) and be continued till some moment in the future.

Assertive form: Subject + Will/Shall + Be + V1 + ing + Object.

Negative form: Subject + Will/Shall + Not + Be + V1 + ing + Object.

Interrogative form: Will/Shall + Subject + Be + V1 + ing + Object?

Example: 1) Technology will be helping humanity to enhance their quality of life.

2) Technology will not be helping humanity to enhance their quality of life.

3) Will technology be helping humanity to enhance their quality of life?

- **Future Perfect Tense:** It is used to express an action which will happen/occur in future and will be completed by a certain time in future.

Assertive form: Subject + Will/Shall + Have + V3 + Object.

Negative form: Subject + Will/Shall + Not + Have + V3 + Object.

Interrogative form: Will/Shall + Subject + Have + V3 + Object?

Example: 1) Technology will have helped humanity to enhance their quality of life.

2) Technology will not have helped humanity to enhance their quality of life.

3) Will technology have helped humanity to enhance their quality of life?

- **Future Perfect Continuous Tense:** It is used to talk about actions that will commence at a fix time in future and will continue for some time in future.

Assertive form: Subject + Will/Shall + Have been + V1 + ing + Object.

Negative form: Subject + Will/Shall + Not + Have been + V1 + ing + Object.

Interrogative form: Will/Shall + Subject + Have been + V1 + ing + Object?

Example: 1) Technology will have been helping humanity to enhance their quality of life.

2) Technology will not have been helping humanity to enhance their quality of life.

3) Will technology have been helping humanity to enhance their quality of life?

2-Active voice and passive voice in scientific writing:

2-1-Definition of Voice:

In grammar, “Voice” means the form of verb by which the relation of the subject to the action implied is indicated. It is the form of the verb which indicates whether the subject does the work or something has been done to it. There are two grammatical voices in English language:



❖ Active Voice:

In active voice, the subject performs the action, making the message direct and engaging.

Example: The researcher conducted the experiment.

❖ Passive Voice:

Passive voice shifts the focus to the object or recipient of the action, often obscuring the subject.

Example: The experiment was conducted by the researcher.

2-2- Principal rules for voice change:

• Rule 01:

The object of the verb in the Active Voice becomes the subject of the verb in the passive voice.

• Rule 02:

The subject of the verb in the Active voice becomes the object in the passive voice. (Generally preceded by the preposition “by”)

• Rule 03:

The main verb is changed into the Past Participle form and it is preceded by the correct form of the verb, “to be” in passive voice.

• Rule 04:

There are some verbs with the objects. In such cases either of the objects can be changed into the subject and the other is retained as an object. The object is called **Retained Object**.

Example: The teacher gave the course to the 3rd level students.

The 3rd level students were given the course by the teacher.

2-2-How to Switch from Passive to Active Voice:

While passive voice is used in scientific writing for emphasizing and for unknown subjects, active voice makes sentences more direct and clear. It generally prevails in scientific writing for clarity and precision, specific situations. It is so more correct to change passive phrases into active style and for this we have to:

❖ **Identify** the subject and the object in the sentence.

Example: The effect of temperature on enzyme activity was measured.

“temperature” is the subject, and “enzyme activity” is the object.

❖ **Determine** who or what is performing the action.

“temperature” performs the action on “enzyme activity.”

❖ **Restructure** the sentence to emphasize the subject as the action doer and the object as the action receiver.

“We measured the effect of temperature on enzyme activity.”

❖ **Utilize** active verbs that precisely describe the action.

“measured” accurately conveys the researcher’s action.

❖ **Revise** the sentence as needed to ensure clarity and conciseness in order to deliver a clear and concise message.

“We measured the effect of temperature on enzyme activity”

2-3- Examples of active and passive voice sentences in scientific style:

Active: “The virus infected the cells.”

Passive: “The cells were infected by the virus.”

Active: “The plant absorbed water through its roots.”

Passive: “Water was absorbed by the plant through its roots.”

Active: “Hydroxyurea had reduced the frequency of painful episodes.”

Passive: “The frequency of painful episodes had been reduced by taking hydroxyurea.”

Active: “Bacteria was producing the enzyme since its maturation”

Passive: “The enzyme was being produced by bacteria since its maturation”

3-Comparative and superlative in scientific writing:

3-1- Definition of adjectives:

Adjectives are words that describe, identify, or quantify nouns and pronouns. They help specify our writing by offering more details about nouns and pronouns.

- **Comparative Adjectives:**

Comparative adjectives are used to compare differences between the two objects they modify (*larger, smaller, faster, higher*). They are used in sentences where two nouns are compared, in this pattern:

Noun (subject) + verb + comparative adjective + *than* + noun (object).

Examples: 1) Everest Mountain is *higher* than Makalu peak.

2) Science is *more difficult* than maths.

- **Superlative Adjectives:**

Superlative adjectives are used to compare three or more situations. They are used to describe an object which is at the upper or lower limit of a quality (*the tallest, the smallest, the fastest, the highest*), in sentences where a subject is compared to a group of objects.

Noun (subject) + verb + *the* + superlative adjective + noun (object).

Examples: 1) Everest is *the highest mountain* in the world.

2) English is *the easiest* language.

3-2-Regular comparative and superlative adjectives:

3-2-1-Definition of syllable:

A unit of pronunciation having one vowel sound, with or without surrounding consonants, forming the whole or a part of a word (noun or adjective).

Examples: Adjectives with **one syllable:** big, cold, hot, long, nice, old, tall.

Adjectives with **two syllables:** peaceful, thoughtful, perfect, Heavy.

Adjectives with **more than two syllables:** expensive, logical, aggressive, dangerous.

- ❖ **One syllable adjectives:**

Add *-er* for the comparative and *-est* for the superlative. If the adjective has a consonant + single vowel + consonant spelling, the final consonant must be doubled before adding the ending.

Adjective	Comparative	Superlative
Tall	Taller	Tallest
Fast	Faster	Fastest
Big	Bigger	Biggest
High	Higher	Highest

❖ **Two syllables' adjectives:**

Adjectives with two syllables can form the comparative either by adding *-er* or by preceding the adjective with *more*. These adjectives form the superlative either by adding *-est* or by preceding the adjective with *most*. For adjectives ending in *y*, change the *y* to an *i* before adding the ending.

Adjective	Comparative	Superlative
Narrow	Narrower	Narrowest
Heavy	Heavier	Heaviest
Glacial	More Glacial	Most Glacial
Careful	More Careful	Most Careful

❖ **More than two syllables' adjectives:**

Adjectives with three or more syllables form the comparative by putting *more* in front of the adjective, and the superlative by putting *most* in front.

Adjective	Comparative	Superlative
Important	More Important	Most Important
Dangerous	More Dangerous	Most Dangerous
Delicate	More Delicate	Most Delicate

3-3-Irregular comparatives and superlatives:

These very common adjectives have completely irregular comparative and superlative forms.

Adjective	Comparative	Superlative
Good	Better	Best
Bad	Worse	Worst
Little	Less	Least
Much	More	Most
Far	Further	Furthest

4- Conditional sentences in scientific writing:

4-1- Definition of conditional sentence:

Conditional sentences have two parts or clauses that give a condition in the dependent clause and a result in the independent clause. The condition clause usually contains an **if statement**. There are several different forms of conditional sentences that allow the writer to express various meanings using different tenses.

4-2-Conditional types:

➤ Type 00:

The zero conditional uses the present tense in both clauses and is used to talk about something that is always or generally true (Scientific facts). The present tense signifies that these actions are both possible and typical.

Form: *If* + Simple Present >>> Simple Present

Examples: 1) If you heat ice, it melts

2) If you cross an international date line, the time changes.

➤ Type 01:

The first conditional uses the present tense in the if clause and the future tense in the result clause. This form is used to talk about something that is a probable future result of a condition.

Form: *If* + Simple Present >>> Simple Future = will + bare infinitive

Examples: 1) If clean energy replaces fossil fuels, the planet will be saved.

2) If temperature levels continue to raise, many species will disappear.

➤ Type 02

The second conditional uses the past tense in the if clause and a modal and base verb in the result clause. This form is used to talk about a hypothetical situation that cannot happen or is unlikely to happen.

Form: *If* + Simple Past >>> would + bare infinitive

Examples: 1) If i studied medicine, i would be a good doctor.

2) If industrial revolution did not occur, the greenhouse effect would not happen.

➤ **Type 03:**

The third conditional uses the past perfect in the if clause and a modal and present perfect in the result clause. This form is used to talk about a hypothetical situation in the past that did not happen typically with an outcome that did not happen and is perhaps the opposite of what did happen.

Form: *If* + Past Perfect >>> would + have + Past Participle

Examples: 1) If you had studied enough, you would have passed your exams.

2) If i hadn't learnt biology, i wouldn't have got this job.