

Chapter 01 : Introduction to English sentence structure and Scientific Terminology

1. Fundamental concepts :

1.1. Concept of Language :

Language is a system of communication that relies on verbal or non-verbal codes consisting of a set of sounds and written symbols used by people of a particular country or region to transfer information. It involves the structural rules or mechanics and uses the functional communicative meaning expressed through interaction.

1.2. Functions of Language :

The function of a language refers to the distinct purposes for which we use speech, text, and gesture ranging from establishing social bonds and expressing internal emotional states for :

- Communication and information transfer which enables individuals to exchange messages, share knowledge, and convey precise information between people.
- Survival and evolutionary advantage evolved over time likely emerging between 100,000 years ago to help human populations cooperate, survive, and develop.
- Social interaction and cohesion that establishes and maintains relationships, shared identities, and community bonds within a specific culture or region.
- Expression of thought and Meaning which serves as a primary vehicle for formulating complex ideas, expressing emotions, and clarifying internal concepts.

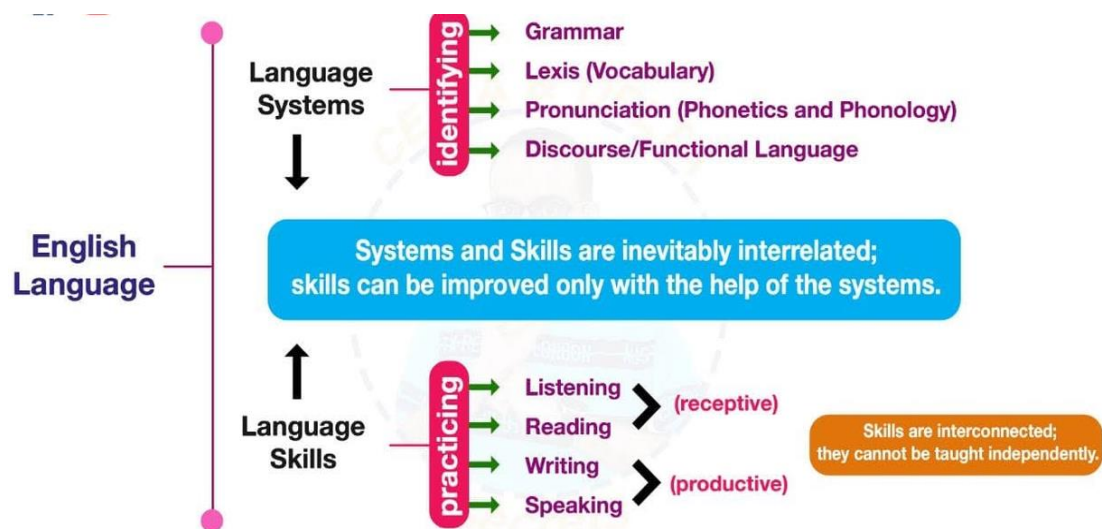


Figure 01. English language systems and skills (Webography 01)

1.3. Concept of Sentence :

A sentence is the first unit in language (Clause or phrase). It is defined as a group of words that makes sense and expresses a complete thought. With at least one subject and one verb, clauses allow us to combine ideas to show their cohesion in speech and writing languages.

2. Principal elements of sentences :

The structure of an English sentence is built around many elements :

2.1. Nouns :

Nouns are words that name persons, places, things, or ideas. They are classified into :

- **Common Nouns** : General names of people, places, or things (Teacher, city, car).
- **Proper Nouns**: Specific names of people, places, or things (Mr. Smith, New York, Toyota).
- **Concrete Nouns** : Things that can be seen, touched, or measured (Apple, dog, building).
- **Abstract Nouns** : Ideas or concepts that cannot be touched or seen (Love, freedom, knowledge).
- **Countable Nouns** : Nouns that can be counted (Book, cat, idea).
- **Uncountable Nouns** : Nouns that cannot be counted (Water, air, information).

2.2. Pronouns :

Pronouns are words that take the place of nouns to avoid repetition. They can be classified into several types :

- **Personal Pronouns** : Refer to specific people or things (I, you, he, she, it, we, they).
- **Possessive Pronouns** : Show ownership (Mine, yours, his, hers, ours, theirs).
- **Reflexive Pronouns** : Refer back to the subject of the sentence (Myself, yourself, himself).
- **Demonstrative Pronouns** : Point to specific things (This, that, these, those).
- **Interrogative Pronouns** : Used to ask questions (Who, whom, whose, which, what).
- **Relative Pronouns** : Introduce relative clauses (Who, whom, whose, which, that).
- **Indefinite Pronouns**: Refer to non-specific things (Someone, anything, everyone, nothing)

2.3. Verbs :

Verbs are words that show action or a state of being. They are essential to the structure of a sentence and can be classified into :

- **Action Verbs** : Show physical or mental action (Run, jump, think, imagine).
- **Linking Verbs** : Connect the subject to additional information (Am, is, was, seem, become)
- **Helping Verbs** : Help the main verb in a sentence by extending its meaning (Have, do, will, would, should, can, could, may, might, must).

2.4. Adjective :

Adjectives are words that describe a noun or pronoun, giving more information about the object signified and include :

- **Descriptive Adjectives** : Describe qualities or states (Happy, blue, large).
- **Quantitative Adjectives** : Indicate the quantity of nouns (Some, many, few).
- **Demonstrative Adjectives** : Point out specific nouns (This, that, these, those).
- **Possessive Adjectives** : Show ownership (My, your, his, her, its, our, their).
- **Interrogative Adjectives** : Used in questions (Which, what, whose).
- **Comparative Adjectives** : Compare two things (Taller, smarter, faster).
- **Superlative Adjectives** : Indicate the extreme or highest degree (Tallest, smartest, fastest).

2.5. Adverbs :

Adverbs are words that describe a verb, adjective, or other adverb, providing more details about how, when, where, or to what extent something happened. They include :

- **Adverbs of Manner** : Describe how an action is performed (Quickly, slowly, carefully).
- **Adverbs of Time** : Indicate when an action occurs (Now, later, yesterday).
- **Adverbs of Place** : Indicate where an action occurs (Here, there, everywhere).
- **Adverbs of Frequency** : Indicate how often an action occurs (Always, often, rarely).
- **Adverbs of Degree** : Indicate the extent or degree of an action (Very, quite, almost).

3. Sentence Structure :

Understanding sentence structure helps in constructing meaningful sentences. A well-formed sentence typically consists of a subject and a predicate, and may also include objects, clauses, and phrases. A sentence is composed of a subject and a predicate :

- **A subject** is the part of the sentence that tells who or what the sentence is about (**The cat** is sleeping).
- **A predicate** is the part of the sentence that tells something about the subject (The cat **is sleeping**).

Objects are words that receive the action of the verb. There are three types of objects :

- **Direct Objects** which receive the action of the verb directly (She reads **books**).
- **Indirect Objects** which indicate to whom or for whom the action is performed (He gave **her** a gift).
- **Object of the Preposition** which Follow a preposition and complete its meaning (She is at the **park**).

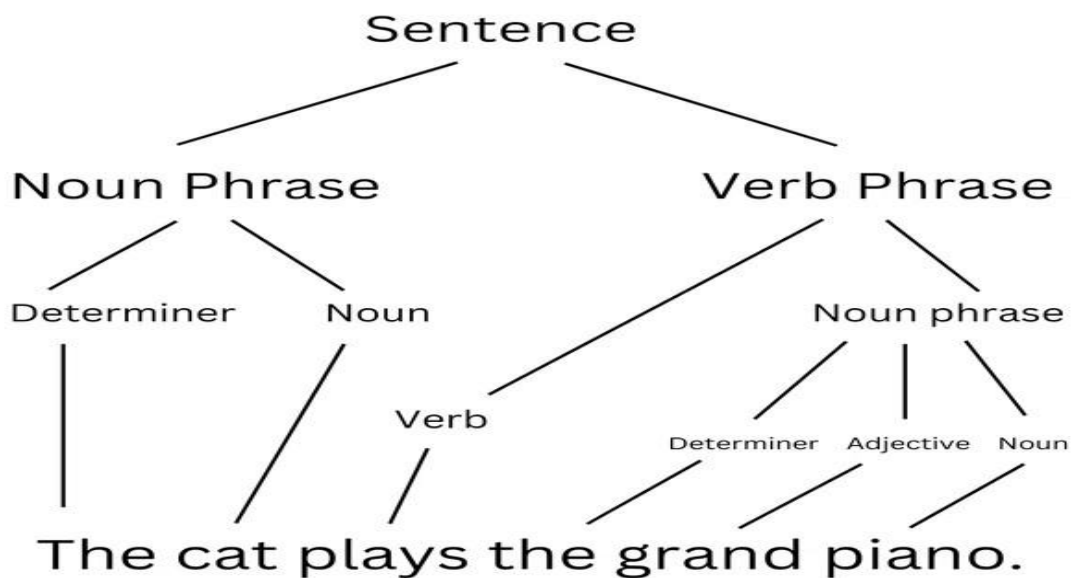


Figure 02. Basic Structure of an English Sentence (Webography 02)

4. Concept of Linguistics :

Linguistics is the scientific study of human language, encompassing its structure, meaning, and use across diverse contexts. At its core, the discipline analyzes the underlying systems that make human communication possible, examining how speech sounds are produced (Phonetics and phonology), how words are formed from smaller units of meaning (Morphology), and how words are arranged into coherent phrases and sentences (Syntax). Beyond structural mechanics, linguistics investigates how meaning is constructed and derived (Semantics) and how physical and social context shapes the interpretation of language (Pragmatics).

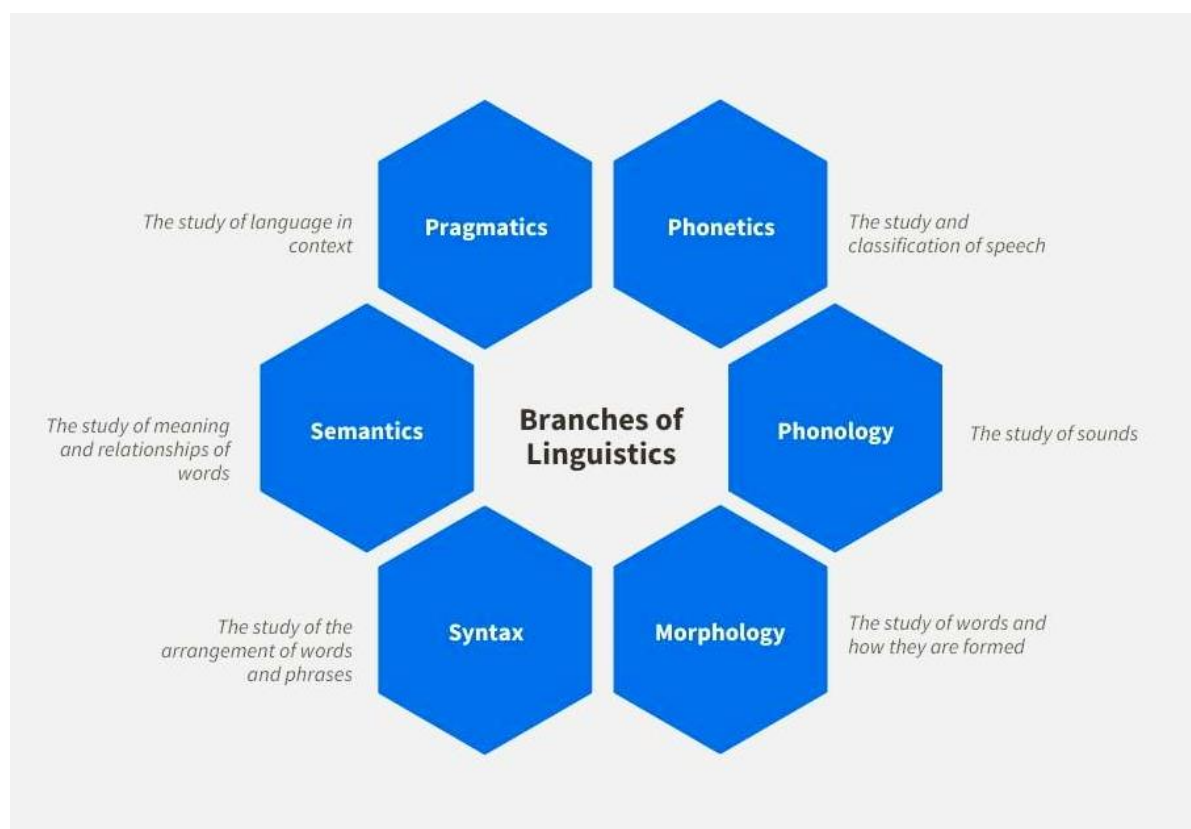


Figure 03. Linguistics principal aspects (Sekai, 2026)

5. Concept of Terminology :

Terminology is the set of specialized words and expressions used in a particular field of knowledge, profession, or discipline to describe concepts, objects, processes, and relationships precisely and unambiguously.

5.1. Scientific Terminology:

Scientific terminology is the part of the language used by scientists in the context of their professional activities. While studying nature, scientists often encounter or create new material or immaterial objects and concepts and are compelled to name them. Only professionals know many of those names. However, due to popularization of science, they gradually become part of common languages. Several categories of scientific terminology can be distinguished in the aim of:

- Providing a common language for people working or studying in the same field.
- Reducing misunderstanding and subjective interpretation.
- Facilitating clear communication, learning and knowledge transmission.
- Supporting accuracy and consistency in writing, teaching, and research.

Each scientific or professional domain (Biology, medicine, law, or engineering) develops its own terminology to ensure that ideas are communicated efficiently, objectively, and reproducibly.

5.2. Biological Terminology:

Biology, like all scientific disciplines, uses a specific and precise terminology to describe structures, processes, and interactions in living organisms. This specialized vocabulary allows scientists, researchers, and students to communicate clearly and efficiently, regardless of their language or country, using correct biological terminology, which:

- Reduces ambiguity and subjective interpretation.
- Ensures accurate understanding of scientific concepts.
- Allows replication of experiments, which is essential in science
- Facilitates learning across different biological sub-fields (Cell biology, genetics,

ecology, microbiology).

For a student of biology, mastering terminology is not optional; it is a fundamental skill that will be used throughout academic studies and professional life.

5.3. Importance of terminology in biology:

Biology deals with complex systems and microscopic structures that cannot be described using everyday language. Saying “Small parts inside the cell” is vague, whereas terms like mitochondria, ribosomes, or nucleus provide precise meaning. Scientific terminology:

- Creates a common language among biologists.
- Improves reading comprehension of textbooks and research articles.
- Enhances written and oral scientific communication.
- Helps students transition from basic to advanced biological concepts.

6. Concept of Etymology:

Etymology is the study of the origin and historical development of words. Many biological terms come from Greek and Latin, languages traditionally used in science. A word may:

- Originate with one meaning.
- Evolve over time.
- Acquire a more precise scientific definition.

Examples:

- 1) Cell comes from the Latin cellula, meaning small room.
- 2) Biology comes from Greek bios meaning life and logos meaning study.

7. Concept of Morphology:

In linguistics, morphology refers to the structure of words and how they are formed. Most biological terms are built from three main components:

- Prefix
- Root
- Suffix:

Studying word structure helps students decode complex biological terms.

7.1. Prefixes:

A prefix is added at the beginning of a word and often modifies its meaning, the common prefixes used in biology are:

- **bio-** = life
- **micro-** = small
- **hyper-** = above, excessive
- **hypo-** = below, deficient

Examples:

- 1) **Biomolecules:** bio (life) + molecules (chemical compounds).
- 2) **Microorganism:** micro (small) + organism (living being).
- 3) **Hyperthermia:** hyper (excessive) + therm (heat).
- 4) **Hypoxia:** hypo (deficient) + ox (oxygen).

7.2. Roots:

A root word is the most basic form of a word and cannot be further divided into meaningful parts. It carries the essential meaning. Root words are used to form new terms by adding prefixes and/or suffixes.

Examples:

- 1) **Ornith** = birds
- 2) **Derm** = skin

7.2. Suffixes:

A suffix is added at the end of a word and often indicates a process, a condition or a field of study.

The common suffixes used in biology are:

- **-logy** = study of
- **-itis** = inflammation
- **-osis** = condition or disease
- **-ase** = enzyme

Examples:

- 1) **Geology:** geo (earth) + logy (study of).
- 2) **Dermatitis:** dermat (skin) + itis (inflammation).
- 3) **Neurosis:** neur (nerve) + osis (condition).
- 4) **Lactase:** lact (milk/lactose) + ase (enzyme).

Table 01. General Biological Terms

Term	Prefix (meaning)	Root (meaning)	Suffix (meaning)	Global meaning
Biology	bio- (life)	log (study)	-y (field of study)	Study of life
Ecology	eco- (house/ environment)	log (study)	-y (science)	Study of organisms and their environment
Microbiology	micro- (small)	bio (life) + log (study)	-y (science)	Study of microscopic life
Anatomy	ana- (up, apart)	tom (cut)	-y (study)	Study of body structure
Physiology	physio- (nature/	log (study)	-y (science)	Study of biological

8. Concept of Glossary:

A glossary, also known as a vocabulary or clavis, is an alphabetical list of terms in a particular domain of knowledge with their definitions. Glossaries are often placed at the end of a book to define novel, uncommon, or specialized terms. A glossary explains concepts relevant to a field of study or action as for Biology.

Table 02. Biological Glossary (Environment)

Word	Meaning
Abiotic	A non-living feature of the environment
Algal bloom	Rapid growth of algae
Bacteria	Microscopic organism
Biomass	Mass of living material
Biotic	A living part of the environment
Birth rate	Rate at which new individuals are added to the population
Branched key	Identification key using lines or pathways
Carnivore	A meat eating organism
Community	All the organisms living in the same area
Competition	Organisms sharing the same resources
Conservation	Controlled use of natural resources
Death rate	Rate at which individuals are removed from the population
Decomposers	Organisms which break down plant and animal remains
Ecosystem	All of the habitats and the communities within an area
Fertiliser	Nutrients used to improve plant growth
Food Chain	Sequence of organisms linked by energy flow
Food web	A series of interconnected food chains
Fossil fuel	Fuel produced from the ancient remains of plants and animals
Growth curve	Curve showing the changes in population size over time
Habitat	The place where an organism lives
Herbivore	An animal which feeds on plants
Indicator species	Organism whose presence can be used to monitor pollution
Nitrates	Nitrogen compound essential for plant growth
Nutrient cycle	Circulation of nutrients between plants, animals and their environment