

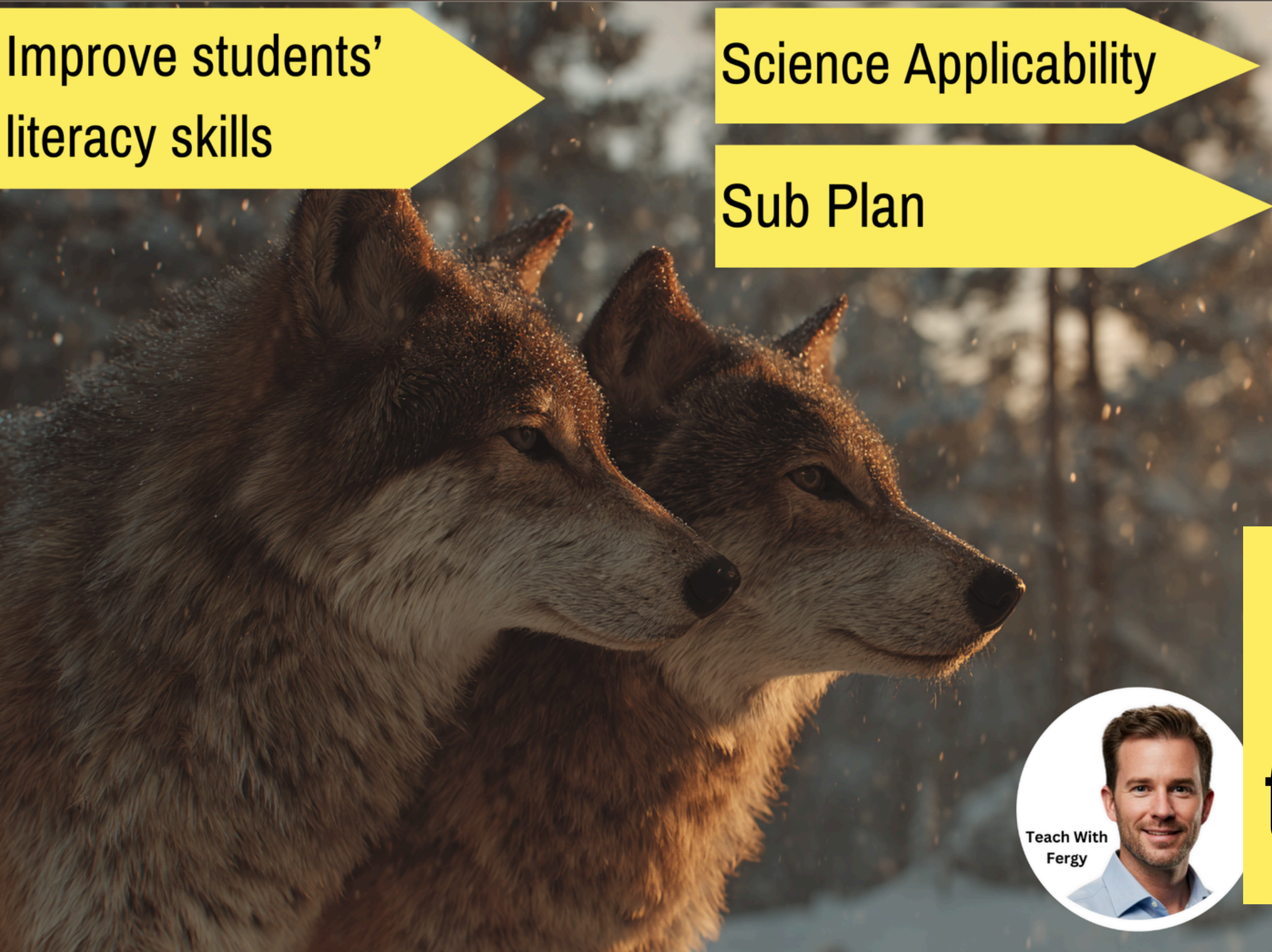
TAXONOMY & CLASSIFICATION OF LIVING THINGS

GRADE 8 AND UP READING

Improve students'
literacy skills

Science Applicability

Sub Plan



Reading Comment



Extremely satisfied - Great resource to work on student reading comprehension and it tied into the topic I was teaching. My students have been struggling with reading and I've been incorporating more reading into my lessons. Thank you for the resource.



SCROLL
to take a look inside!

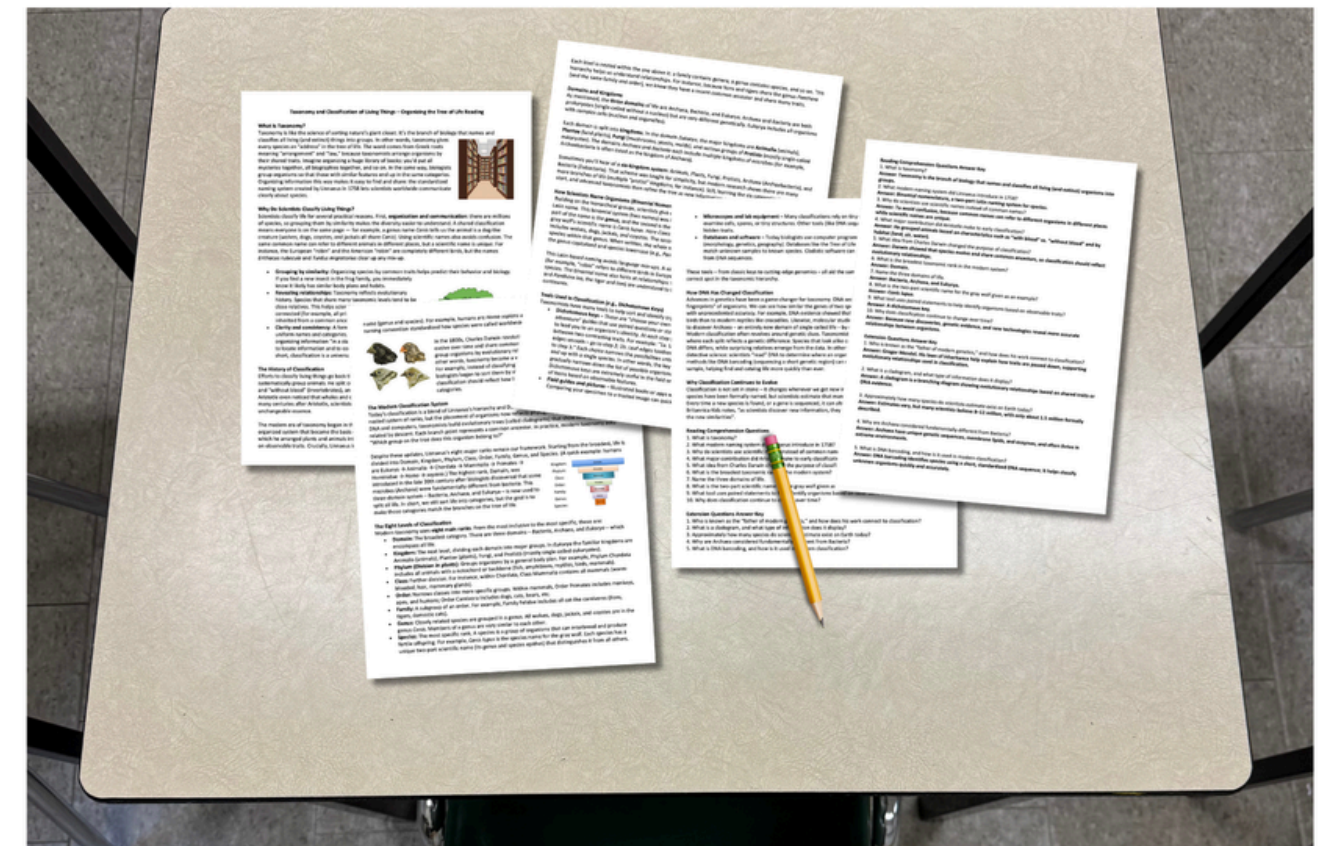


THE PROBLEMS YOU FACE

- Limited time to teach scientific literacy and strengthen students' reading and analysis skills.
- Need meaningful extension activities to engage fast-moving learners.
- Difficulty creating effective last-minute sub plans that still support student learning.

CLASSROOM READY

- Questions and Answer Key
- **No Prep, Ready-to-Use:** Print or assign digitally with Google Docs, Microsoft Word, and PDF formats for flexible classroom use
- **Includes Varied Question Types:** Knowledge, thinking, connecting, application, and open-ended questions.



What Will Your Students Learn?

READING COMPREHENSION ARTICLE & QUESTION BUNDLE

Reading Comprehension Questions

1. What is taxonomy?
2. What modern naming system did Linnaeus introduce in 1758?
3. Why do scientists use scientific names instead of common names?
4. What major contribution did Aristotle make to early classification?
5. What idea from Charles Darwin changed the purpose of classification?
6. What is the purpose of the modern system?
7. Name
8. What
9. What
10. Wh

Extens

1. Wh
2. Wh
3. App
4. Wh
5. Wh

Article with
Comprehension
Questions

Grade 8 and Up

Print & Digital

- What Is Taxonomy?
- Why Do Scientists Classify Living Things?
- History of Classification
- The Modern Classification System
- The Eight Levels of Classification
- Domains and Kingdoms
- How Scientists Name Organisms (Binomial Nomenclature)
- Dichotomous keys, Field guides, Microscopes, and DNA technology
- How DNA Has Changed Classification
- Why Classification Continues to Evolve

Your Reading

Taxonomy and Classification of Living Things – Organizing the Tree of Life Reading

What Is Taxonomy?

Taxonomy is like the science of sorting nature’s giant closet. It’s the branch of biology that names and classifies all living (and extinct) things into groups. In other words, taxonomy gives every species an “address” in the tree of life. The word comes from Greek roots meaning “arrangement” and “law,” because taxonomists arrange organisms by their shared traits. Imagine organizing a huge library of books: you’d put all mysteries together, all biographies together, and so on. In the same way, biologists group organisms so that those with similar features end up in the same categories. Organizing information this way makes it easy to find and share: the standardized naming system created by Linnaeus in 1758 lets scientists worldwide communicate clearly about species.

Why Do Scientists Classify Living Things?

Scientists classify life for several practical reasons. First, **organization and communication**: there are millions of species, so grouping them by similarity makes the diversity easier to understand. A shared classification means everyone is on the same page — for example, a genus name *Canis* tells us the animal is a dog (wolves, dogs, coyotes, and jackals all share *Canis*). Using scientific names also avoids confusion: the same common name can refer to different animals in different places, but a scientific name is unique. For instance, the European “robin” and the American “robin” are completely different birds, but the names *Erithacus rubecula* and *Turdus migratorius* clear up any mix-up.

- **Grouping by similarity**: Organizing species by common traits helps predict their behavior and needs. If you find a new insect in the frog family, you immediately know it likely has similar body plans and habits.
- **Revealing relationships**: Taxonomy reflects evolutionary history. Species that share many taxonomic levels tend to be close relatives. This helps scientists understand how life is connected (for example, all primates share a set of traits inherited from a common ancestor).
- **Clarity and consistency**: A formal classification provides uniform names and categories. As Britannica notes, organizing information “in a standardized way makes it easy to locate information and to communicate it to others”. In short, classification is a universal language of biology.

The History of Classification

Efforts to classify living things go back thousands of years. In ancient Greece, Aristotle was one of the first to systematically group animals. He split creatures into broad categories like “with blood” (roughly vertebrates) and “without blood” (invertebrates), and further divided them by habitat (land, air, water). Remarkably, Aristotle even noticed that whales and dolphins had warm-blooded, mammal-like traits and were the only “fish” that lived on land. Many centuries after Aristotle, scientists relied on his logic-based system, trying to define each animal’s unchangeable essence.

The modern era of taxonomy began in the 1700s with Carl Linnaeus. This Swedish botanist created a formalized system that became the basis of today’s classification. In 1735 he published *Systema Naturae*, in which he arranged plants and animals into a hierarchy of ranks (kingdom, class, order, genus, species). Crucially, Linnaeus introduced **binomial nomenclature**: every species got a two-part name (genus and species). For example, humans are *Homo sapiens* and the gray wolf is *Canis lupus*. This naming convention standardized how species were called worldwide.

In the 1800s, Charles Darwin revolutionized taxonomy by proposing that species evolve over time and share common ancestors. Darwin’s idea: group organisms by evolutionary relationships rather than just by shared traits. In other words, taxonomy became a way of tracing branches on a tree of life. For example, instead of classifying birds and reptiles by similar features, biologists began to sort them by shared ancestry. Darwin’s theory of evolution showed that classification should reflect how life has branched and changed over time.

The Modern Classification System

Today’s classification is a blend of Linnaeus’s hierarchy and Darwin’s evolutionary thinking. It’s a nested system of ranks, but the placement of organisms now reflects phylogeny (evolutionary relationships). DNA and computers, taxonomists build evolutionary trees (called cladograms) that show how species are related by descent. Each branch point represents a common ancestor. In practice, modern taxonomy asks: “Which group on the tree does this organism belong to?”

Despite these updates, Linnaeus’s eight major ranks remain our framework. Starting from the broadest to the most specific, they are: Kingdom, Phylum, Class, Order, Family, Genus, and Species. (A quick note: Linnaeus originally used “tribe” between family and genus, but it’s rarely used today.) The highest rank, Domain, was introduced in the late 20th century after biologists discovered that some microbes (Archaea) were fundamentally different from bacteria. This three-domain system — Bacteria, Archaea, and Eukarya — is now used to split all life. In short, we still sort life into categories, but the goal is to make those categories match the branches on the tree of life.

The Eight Levels of Classification

Modern taxonomy uses **eight main ranks**. From the most inclusive to the most specific, they are:

- **Domain**: The broadest category. There are three domains — *Bacteria*, *Archaea*, and *Eukarya* — which encompass all life.
- **Kingdom**: The next level, dividing each domain into major groups. In *Eukarya*, the kingdoms are Animalia (animals), Plantae (plants), Fungi, and Protista (mostly single-celled eukaryotes).
- **Phylum (Division in plants)**: Groups organisms by a general body plan. For example, the phylum Chordata includes all animals with a notochord or backbone (fish, amphibians, reptiles, birds, and mammals).
- **Class**: Further division. For instance, within Chordata, Class Mammalia contains all mammals (mammals), including humans.
- **Order**: Narrows classes into more specific groups. Within mammals, Order Primates includes apes and humans; Order Carnivora includes dogs, cats, bears, etc.
- **Family**: A subgroup of an order. For example, Family Felidae includes all cat-like carnivores (tigers, domestic cats).
- **Genus**: Closely related species are grouped in a genus. All wolves, dogs, jackals, and coyotes belong to the genus *Canis*. Members of a genus are very similar to each other.
- **Species**: The most specific rank. A species is a group of organisms that can interbreed and produce fertile offspring. For example, *Canis lupus* is the species name for the gray wolf. Each species has a unique two-part scientific name (its genus and species epithet) that distinguishes it from all others.

Each level is nested within the one above it: a family contains genera, a genus contains species, and so on. This hierarchy helps us understand relationships. For instance, because lions and tigers share the genus *Panthera* (and the same family and order), we know they have a recent common ancestor and share many traits.

Domains and Kingdoms

As mentioned, the **three domains** of life are Archaea, Bacteria, and Eukarya. Archaea and Bacteria are both prokaryotes (single-celled without a nucleus) but are very different genetically. Eukarya includes all organisms with complex cells (nucleus and organelles).

Each domain is split into **kingdoms**. In the domain *Eukarya*, the major kingdoms are: **Plantae** (land plants), **Fungi** (mushrooms, yeasts, molds), and various groups of eukaryotes. The domains *Archaea* and *Bacteria* each include multiple kingdoms, but they are less commonly discussed in introductory biology.

Sometimes you’ll hear of a **six-kingdom system**: Animals, Plants, Fungi, Protists, Bacteria (Eubacteria), and Archaea. That scheme was taught for simplicity, but modern taxonomy recognizes more branches of life (multiple “protist” kingdoms, for instance). Still, the six-kingdom system is a useful starting point for understanding the tree of life.

How Scientists Name Organisms (Binomial Nomenclature)

Building on the hierarchical groups, scientists give each species a unique two-part Latin name. This binomial system (two names) was invented by Linnaeus. The first part of the name is the **genus**, and the second is the **species epithet**. For example, the gray wolf’s scientific name is *Canis lupus*. Here *Canis* (capitalized) is the genus, and *lupus* (lowercase) is the species epithet. The genus is always capitalized, and the species epithet is always lowercase. For example, *Panthera leo* (lion) and *Escherichia coli* (bacterium).

This Latin-based naming avoids language mix-ups. A single “common name” (for example, “robin”) refers to different birds in Europe and America), but the scientific name is unique. The binomial name also hints at relationships: two species with the same genus (like *Panthera leo* and *Panthera tigris*) are understood to be very closely related.

Tools Used in Classification (e.g., Dichotomous Keys)

Taxonomists have many tools to help sort and identify organisms:

- **Dichotomous keys** — These are “choose-your-own-adventure” guides that use paired questions or statements to lead you to an organism’s identity. At each step you pick between two contrasting traits. For example: “1a. Leaf edges smooth — go to step 2; 1b. Leaf edges toothed — go to step 3.” Each choice narrows the possibilities until you end up with a single species. In other words, the key gradually narrows down the list of possible organisms. Dichotomous keys are extremely useful in the field or lab to identify unknown specimens based on observable features.
- **Field guides and pictures** — Illustrated books or apps with photos of organisms. Comparing your specimen to a trusted image can quickly suggest its identity.

- **Microscopes and lab equipment** — Many classifications rely on tiny details. Microscopes allow scientists to examine cells, spores, or tiny structures. Other tools (like DNA sequencers or chemical tests) reveal hidden traits.
- **Databases and software** — Today biologists use computer programs to compare large datasets (morphology, genetics, geography). Databases like the Tree of Life or DNA barcoding libraries match unknown samples to known species. Cladistic software can even compute an evolutionary tree from DNA sequences.

These tools — from classic keys to cutting-edge genomics — all aid the same goal: placing each organism in its correct spot in the taxonomic hierarchy.

How DNA Has Changed Classification

Advances in genetics have been a game-changer for taxonomy. DNA sequencing lets us compare the “fingerprints” of organisms. We can see how similar the genes of two species are and build evolutionary trees with unprecedented accuracy. For example, DNA evidence showed that dinosaurs are more closely related to birds than to modern reptiles like crocodiles. Likewise, molecular studies in the 1970s and 80s led to the discovery of Archaea — an entirely new domain of single-celled life — by comparing ribosomal RNA. Modern classification often revolves around genetic clues. Taxonomists build cladograms (branching diagrams) where each split reflects a genetic difference. Species that look alike can turn out to be distantly related (convergent evolution), while surprising relatives emerge from the data. In other words, taxonomy has become detective science: scientists “read” DNA to determine where an organism belongs on the tree of life. Methods like DNA barcoding (sequencing a short genetic region) can even identify species from a sample, helping find and catalog life more quickly than ever.

Why Classification Continues to Evolve

Classification is not set in stone — it changes whenever we get new information. To date, about 1.5 million species have been formally named, but scientists estimate that many millions more are still undiscovered. Every time a new species is found, or a gene is sequenced, it can alter the branches of the tree. As Britannica Kids notes, “as scientists discover new information, they rearrange classification groups to reflect the new similarities”.

Reading Comprehension Questions

1. What is taxonomy?
2. What modern naming system did Linnaeus introduce in 1758?
3. Why do scientists use scientific names instead of common names?
4. What major contribution did Aristotle make to early classification?
5. What idea from Charles Darwin changed the purpose of classification?
6. What is the broadest taxonomic rank in the modern system?
7. Name the three domains of life.
8. What is the two-part scientific name for the gray wolf given as an example?
9. What tool uses paired statements to help identify organisms based on observable traits?
10. Why does classification continue to change over time?

Extension Questions Answer Key

1. Who is known as the “father of modern genetics,” and how does his work connect to classification?
2. What is a cladogram, and what type of information does it display?
3. Approximately how many species do scientists estimate exist on Earth today?
4. Why are Archaea considered fundamentally different from Bacteria?
5. What is DNA barcoding, and how is it used in modern classification?

Reading Comprehension Questions Answer Key

1. What is taxonomy?
Answer: Taxonomy is the branch of biology that names and classifies all living (and extinct) organisms into groups.
2. What modern naming system did Linnaeus introduce in 1758?
Answer: Binomial nomenclature, a two-part Latin naming system for species.
3. Why do scientists use scientific names instead of common names?
Answer: To avoid confusion, because common names can refer to different organisms in different places while scientific names are unique.
4. What major contribution did Aristotle make to early classification?
Answer: He grouped animals based on characteristics such as “with blood” vs. “without blood” and by habitat (land, air, water).
5. What idea from Charles Darwin changed the purpose of classification?
Answer: Darwin showed that species evolve and share common ancestors, so classification should reflect evolutionary relationships.
6. What is the broadest taxonomic rank in the modern system?
Answer: Domain.
7. Name the three domains of life.
Answer: Bacteria, Archaea, and Eukarya.
8. What is the two-part scientific name for the gray wolf given as an example?
Answer: *Canis lupus*.
9. What tool uses paired statements to help identify organisms based on observable traits?
Answer: A dichotomous key.
10. Why does classification continue to change over time?
Answer: Because new discoveries, genetic evidence, and new technologies reveal more accurate evolutionary relationships between organisms.

Extension Questions Answer Key

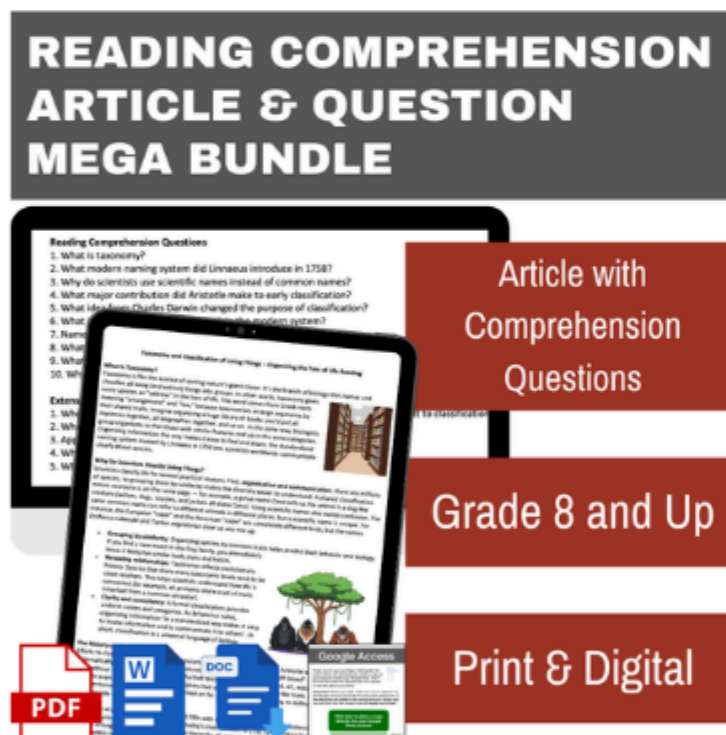
1. Who is known as the “father of modern genetics,” and how does his work connect to classification?
Answer: Gregor Mendel. His laws of inheritance help explain how traits are passed down, supporting evolutionary relationships used in classification.
2. What is a cladogram, and what type of information does it display?
Answer: A cladogram is a branching diagram showing evolutionary relationships based on shared traits or DNA evidence.
3. Approximately how many species do scientists estimate exist on Earth today?
Answer: Estimates vary, but many scientists believe 8–12 million, with only about 1.5 million formally described.
4. Why are Archaea considered fundamentally different from Bacteria?
Answer: Archaea have unique genetic sequences, membrane lipids, and enzymes, and often thrive in extreme environments.
5. What is DNA barcoding, and how is it used in modern classification?
Answer: DNA barcoding identifies species using a short, standardized DNA sequence; it helps classify unknown organisms quickly and accurately.

Comprehension and Extension Questions



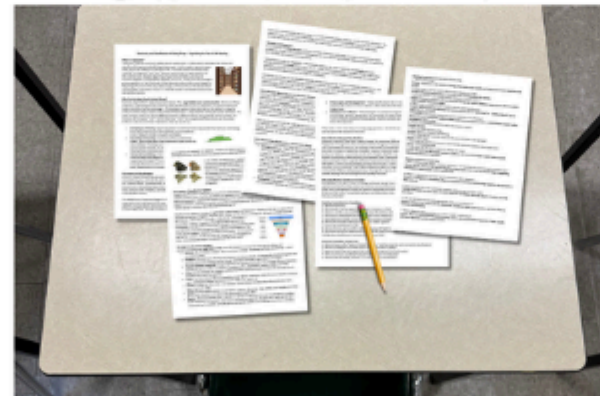
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CLASSROOM READY

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★★★★★ Extremely satisfied - It is a good supplemental activity either for review and at the same time introducing some concept. I also use this for sub plan. It is well presented, organized and interesting.

★★★★★ Extremely satisfied - This a great resource. I used this for a sub plan. It was fun and engaging for my students.

Grade 8 and Up Scientific Reading Comprehension Article Mega Bundle

ALL my current and future grade 8 and up readings, covering the following subject areas:

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Energy
Health
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