Vertical Alignment of Structure and Function

TEKS in Focus highlights key concepts and student expectations to assist educators in implementing the science Texas Essential Knowledge and Skills (TEKS). The vertical progression of a concept within the science TEKS is provided along with a side-by-side view of the changes implemented in 2024.

Elementary School

Level of Study	Prior Science TEKS	TEKS Implemented in 2024
Kindergarten	K.10.B identify **basic parts** of plants and animals; **K.10.A sort plants and animals into groups based on physical characteristics such as color, size, body covering, or leaf shape;**	K.13.A identify the **structures** of plants, **including roots, stems, leaves, flowers, and fruits**; K.12.B identify the **different structures** that animals have **that allow them to interact with their environment such as seeing, hearing, moving, and grasping objects**;
Grade 1	1.10.A **investigate how** the external **characteristics** of an animal **are related to where it** lives, **how it** moves, **and what it** eats; **1.10.B identify and compare the parts of plants;**	**1.13.A identify** the external **structures of different** animals and **compare how those structures help different animals** live, move, **and meet basic needs for survival**;
Grade 2	2.9.A identify the **basic needs of** plants and animals; 2.10.B **observe, record,** and compare how the **physical characteristics** of plants help them meet their basic needs **such as** stems **carry water throughout the plant**; 2.10.A **observe**, record, and compare how the **physical characteristics** and behaviors of animals help them **meet their basic needs**	2.13.A **identify the roots,** stems**, leaves, flowers, fruits, and seeds** of plants and compare how those **structures** help different plants meet their basic needs **for survival**; 2.13.B record and compare how the **structures** and behaviors of animals help them **find and take in food, water, and air**;
Grade 3	3.10.A explore how structures and functions **of plants and** animals **allow** them to survive in **a particular** environment	3.13.A explore **and explain** how **external** structures and functions of animals **such as the neck of a giraffe or webbed feet on a duck enable** them to survive in **their** environment; and
Grade 4	4.10.A explore how structures and functions **enable organisms** to survive in their environment;	4.13.A explore **and explain** how structures and functions **of plants such as waxy leaves and deep roots enable them** to survive in their environment; and
Grade 5	5.10.A **compare** the structures and functions of different species **that help them live and** survive in **a specific** environment **such as hooves on prairie animals or webbed feet in aquatic animals**;	5.13.A **analyze** the structures and functions of different species **to identify how organisms** survive in **the same** environment; and

Key Changes in Structure and Function: Elementary

- **Kindergarten:** In addition to identifying physical characteristics of organisms, students include how structures are used to interact with the environment.
- **Grade 1:** Students focus on animal structures and will continue the study of plants in grade 2.
- **Grade 2:** Students determine how basic needs of plants and animals are met through structures and behaviors.
- **Grade 3:** Students focus on how structures and functions of animals help them survive in their environment.
- **Grade 4:** Students focus on how structures and functions of plants help them survive in their environment.
- **Grade 5:** Students focus on how structures and functions of different plant and animal species enable success within the same environment.

Middle School

Level of Study	Prior Science TEKS	TEKS Implemented in 2024
Grade 6	6.12.A **understand that all** organisms are composed of one or more cells 7.12.F **recognize the components of** cell theory.	6.13.A describe the historical development of cell theory and explain how organisms are composed of one or more cells, which come from pre-existing cells and are the basic unit of structure and function;
Grade 7	7.12.B identify the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, **excretory**, reproductive, integumentary, nervous, and endocrine systems;	7.13.A identify **and model** the main functions of the systems of the human organism, including the circulatory, respiratory, skeletal, muscular, digestive, **urinary**, reproductive, integumentary, nervous, **immune**, and endocrine systems;
Grade 8	7.12.A **investigate and explain** how **internal** structures **of organisms have adaptations that allow specific functions such as gills in fish, hollow bones in birds, or xylem in plants;** 7.12.B **explain** variation within a population **or species by comparing external features,** behaviors, or physiology **of organisms that enhance their** survival **such as migration, hibernation, or storage of food in a bulb.** Bio.12.B **compare** variations and adaptations of **organisms in different ecosystems**; 7.12.D **differentiate between structure and** function in plant and animal cell **organelles**, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole;	8.13.C describe how variations of traits within a population lead to structural, behavioral, and physiological adaptations that influence the likelihood of survival and reproductive success of a species over generations. 8.13.A **identify the** function **of** the cell membrane, cell wall, nucleus, **ribosomes**, cytoplasm, mitochondria, chloroplasts, and vacuoles in plant or animal cells;

Key Changes in Structure and Function: Middle School

- **Grade 6:** Students now study cell theory in grade 6 (previously grade 7).
- **Grade 7:** Students are expected to model the functions of systems. Excretion of waste has been narrowed to focus on the urinary system. The immune system was added.
- **Grade 8:** Students now study the concept of variations influencing the survival of populations and the functions of organelles (previously grade 7).

High School

Level of Study	Prior Science TEKS	TEKS Implemented in 2024
Biology	Bio.10.A **describe** the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals;	Bio.12.A **analyze** the interactions that occur among systems that perform the functions of regulation, nutrient absorption, reproduction, and defense from injury or illness in animals; and
	Bio.10.B **describe** the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants; and	Bio.12.B **explain how** the interactions that occur among systems that perform functions of transport, reproduction, and response in plants **are facilitated by their structures**.
	Bio.9.A **compare** the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids;	Bio.5.A **relate** the functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids, **to the structure and function of a cell**;
	Bio.4.A compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity;	Bio.5.B compare and contrast prokaryotic and eukaryotic cells, including their complexity, and compare and contrast scientific explanations for cellular complexity;
	Bio.9.B **compare the reactants and products of** photosynthesis and cellular respiration **in terms of** energy, **energy conversions, and** matter; and	Bio.11.A **explain how** matter **is conserved and** energy **is transferred during** photosynthesis and cellular respiration **using models, including the chemical equations for these processes**;
	Bio.4.B investigate **and explain** cellular **processes, including** homeostasis **and** transport of molecules; and	Bio.5.C investigate homeostasis **through the** cellular transport of molecules;
	Bio.9.C **identify and** investigate the role of enzymes.	Bio.11.B **investigate and explain** the role of enzymes **in facilitating cellular processes.**

Key Changes in Structure and Function: High School

- **Biology:** Student expectations increased in rigor and specificity, and recurring themes and concepts were incorporated.

TEKS in Focus spotlights concepts or student expectations monthly to bolster TEKS alignment, rigor, and collective understanding. It does not suggest an order or timing but helps with comprehension of TEKS changes, serving as a guide when relevant to classroom instruction.