lead4ward

Academic Vocabulary

CONTENT BUILDER FOR THE PLC

SCIENCE
BIOLOGY

Cell Structure and Function

B.4 **Science concepts.** The student knows that cells are the basic structures of all living things with specialized parts that perform specific functions and that viruses are different from cells.

B.4(B) investigate and explain cellular processes, including homeostasis, energy conversions, transport of molecules, and synthesis of new molecules

B.4(C) compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza

important words for concept development					
standard	**words new to grade level**			**previously introduced words**	
B.4(B)	active transport* ADP (adenosine diphospate) aerobic cellular respiration* anaerobic cellular respiration ATP (adenine triosphate)* chemosynthesis concentration gradient	endo and exocytosis endoplasmic reticulum energy conversion* facilitated diffusion homeostasis hydrolysis hypertonic hypotonic isotonic metabolism molecule transport	nucleic acids osmosis osmotic balance passive transport permeability permeability semi-permeable synthesis* vesicle	animal cell carbohydrates cell membrane cell wall cell, cellular chloroplast cytoplasm endoplasmic reticulum* flagella golgi apparatus * lipids lysosome*	mitochondria* molecules nucleolus* nucleus organelle* photosynthesis plant cell plasma membrane* plastid* proteins ribosome* vacuole*
B.4(C)	antibiotic bacteriophage capsid* chicken pox* DNA viruses* genetic material* hepatitis C herpes* hosts*	human immunodeficiency virus (HIV)* immune cells* influenza lysogenic cycle* lytic cycle* measles mumps passive immunity	pathogen prion* retrovirus* RNA Viruses rubella* small pox* t-cell* vaccine viral reproduction* viral structure virus*	cell* disease host immune system infect* reproductive cycle* toxin	

other words related to the content

cellular process*	ion*	mechanism*	projections*
concentration gradient*	machinery*	phosphate bond*	symptoms*
glucose molecule*	nonliving*		

Organism Growth and Cell Differentiation

B.5 **Science concepts.** The student knows how an organism grows and the importance of cell differentiation.

B.5(A) describe the stages of the cell cycle, including deoxyribonucleic acid (DNA) replication and mitosis, and the importance of the cell cycle to the growth of organisms

important words for concept development			
standard	**words new to grade level**		**previously introduced words**
B.5(A)	adenine	G1 stage/phase*	cellular process*
	anaphase*	G2 stage/phase*	chromosomes
	binary fission	guanine	deoxyribonucleic acid (DNA)*
	cancer	interphase*	muscle cells
	cell cycle*	M stage/phase*	mutation
	cell differentiation	metaphase*	nucleus
	centriole*	mitosis*	organelle
	centromere*	nucleotide	
	chromatid*	prophase*	
	chromosome*	RNA	
	cytokinesis*	S stage/phase*	
	cytosine	somatic cells	
	daughter cell*	telophase	
	diploid*	thymine	
	DNA replication*	transcription*	
		uracil	

other words related to the content

complimentary strand	environmental factors	phase*	stage*
disruptions	epithelium cells	poles (of a cell)*	translation
double helix	gene	specialized cells	

Mechanisms of Genetics

B.6 **Science concepts.** The student knows the mechanisms of genetics, including the role of nucleic acids and the principles of Mendelian Genetics.

B.6(A) identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA

B.6(E) identify and illustrate changes in DNA and evaluate the significance of these changes

B.6(F) predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance

important words for concept development				
standard	**words new to grade level**		**previously introduced words**	
B.6(A)	adenines* amino acid cytosine double helix* genetic code* guanine hydrogen bond*	nitrogenous base* nucleotide* phosphates* polypeptide chain thymine thymine* uracil	chromosomes* deoxyribose* DNA (deoxyribonucleic acid)* protein traits*	
B.6(E)	anticodon* base sequence* cystic fibrosis deletion mutation deletion mutation* DNA triplet* duplication mutation frameshift mutation* gamete* gene mutation insertion mutation*	inversion mutation messenger RNA non-disjunction peptide bond point mutation ribosomal RNA RNA polymerase sickle cell anemia substitution mutation* transcription translocation	adenine chromosome* cytosine DNA* genetic change* guanine mutation* thymine transfer translation uracil	
B.6(F)	allele* codominance dihybrid crosses* dominance* incomplete dominance law of independent assortment	law of segregation monohybrid crosses non-Mendelian inheritance principle of dominance punnett square* polygenetic traits	cross* gene* genotype* genotypic ratio* Gregor Mendel* heterozygous*	homozygous* inherited traits offspring* outcome* phenoytpe recessive*

other words related to the content

characteristics*	genetic combinations	mitosis	sequence*
complementary nucleotide*	meiosis	model (process)*	structure*
DNA molecule*			

Evolutionary Theory

B.7 **Science concepts.** The student knows evolutionary theory is a scientific explanation for the unity and diversity of life.

B.7(A) analyze and evaluate how evidence of common ancestry among groups is provided by the fossil record, biogeography, and homologies, including anatomical, molecular, and developmental

B.7(E) analyze and evaluate the relationship of natural selection to adaptation and to the development of diversity in and among species

important words for concept development				
standard	**words new to grade level**		**previously introduced words**	
B.7(A)	anatomical homology	homology	ancestor*	genus*
	biogeography	molecular homology	descended*	native*
	developmental homology	phylogenic*	DNA sequence*	offspring*
	genome map*	radioactive dating	evolution	species*
			fossil record	taxonomic*
B.7(E)	diversity		adapt, adaptation*	population*
	gene frequency*		competition*	predator*
	isolation		environment*	reproduce*
	natural selection		habitat*	species*
			offspring*	survive*

other words related to the content

artificial selection
common ancestry*
extinction

Taxonomy of Organisms

B.8 **Science concepts.** The student knows that taxonomy is a branching classification based on the shared characteristics of organisms and can change as new discoveries are made.

B.8(B) categorize organisms using a hierarchical classification system based on similarities and differences shared among groups

important words for concept development			
standard	**words new to grade level**	**previously introduced words**	
B.8(B)	hierarchical classification system	animals*	family
	taxonomic group*	archaea*	fungi*
		autotroph	genus
		bacteria*	heterotroph
		characteristics*	kingdom
		cladogram	order
		class	phylum
		classify*	plants
		dichotomous key*	protists
		domain	species*

other words related to the content

diversity

Molecules

B.9 **Science concepts.** The student knows the significance of various molecules involved in metabolic processes and energy conversions that occur in living organisms.

B.9(A) compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids

important words for concept development				
standard	**words new to grade level**		**previously introduced words**	
B.9(A)	amino acid*	lipid*	carbon*	oxygen
	biomolecule*	macromolecule	complex molecules	phosphorus*
	carbohydrate*	monomer	hydrogen	protein*
	catalyst	nucleic acids*	molecule*	simple organic molecules
	dehydration synthesis*	nucleotide	nitrogen*	
	enzyme	peptide bond*		
	fatty acid*	polymer*		

other words related to the content

energy*	inorganic	models (process)*	structure*
function	metabolize*	organic	

Levels of Biological Systems

B.10 **Science concepts.** The student knows that biological systems are composed of multiple levels.

B.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

B.10(B) describe the interactions that occur among systems that perform the functions of transport, reproduction, and response in plants

important words for concept development				
standard	**words new to grade level**		**previously introduced words**	
B.10(A)	feedback loop homeostasis immune system lymphatic system nutrient absorption pathogen regulation		circulatory system* defense digestive system endocrine system excretory system illness integumentary system interactions*	muscular system nervous system reproduction reproductive system respiratory system skeletal system systems [body]*
B.10(B)	cuticle geotropism* guard cell* mesophyll cell* phloem	phototropism* pith stoma* thigmotropism xylem*	cellular reproduction* reproduction* response* roots* shoot system*	stem* systems* transpiration transport*

other words related to the content

digestive tract* function*	human body [systems]* Interactions	negative feedback mechanism positive feedback mechanism	reflex arc reflex response*

Balance of Biological Systems

B.11 **Science concepts.** The student knows that biological systems work to achieve and maintain balance.

important words for concept development		
standard	**words new to grade level**	**previously introduced words**
related vocabulary from supporting standards	feedback loops	climate
	homeostasis	disease
	negative feedback	hormones
	osmotic balance	pH
	positive feedback	temperature regulation

other words related to the content

Ecological Succession

B.11 **Science concepts.** The student knows that biological systems work to achieve and maintain balance.

B.11(D) describe how events and processes that occur during ecological succession can change populations and species diversity

important words for concept development			
standard	**words new to grade level**	**previously introduced words**	
B.11(D)	biomass	competition	population diversity*
	ecosystem stability	ecological succession*	populations*
	primary succession	human impact	species diversity*
	secondary succession	natural disaster	
	symbiosis		

other words related to the content

biological competition*
community*
disturbance*
ecosystem*
succeed*

Organism Behavior

B.12 **Science concepts.** The student knows that interdependence and interactions occur within an environmental system.

B.12(A) interpret relationships, including predation, parasitism, commensalism, mutualism, and competition among organisms

B.12(C) analyze the flow of matter and energy through trophic levels using various models, including food chains, food webs, and ecological pyramids

B.12(F) describe how environmental change can impact ecosystem stability

important words for concept development			
standard	**words new to grade level**	**previously introduced words**	
B.12(A)	competition for resources	commensalism*	predation
	symbiotic relationship	parasitism*	mutualism*
B.12(C)	10% Energy Rule	abiotic factor	flow of energy
	autotrophs (producers)	biotic factor	flow of matter
	detritivores*	carnivore	food chains
	heterotrophs (consumers)	consumer	food webs*
	trophic levels*	decomposer*	herbivore
		ecological pyramids*	omnivore*
		energy pyramid*	producer
B.12(F)	biotic potential	ecosystem*	nutrients*
	diversity-stability relationship	ecosystem stability	organisms*
	dynamic equilibrium	environmental changes	resilience
	environmental resistance	impact*	resistance*
	invasive species		

other words related to the content

carrying capacity
competitive*
diversity
environment*
heat*
limiting factors
marine ecosystem*
models (process)*
native species*
natural selection
predator*
prey
relationship*
species*